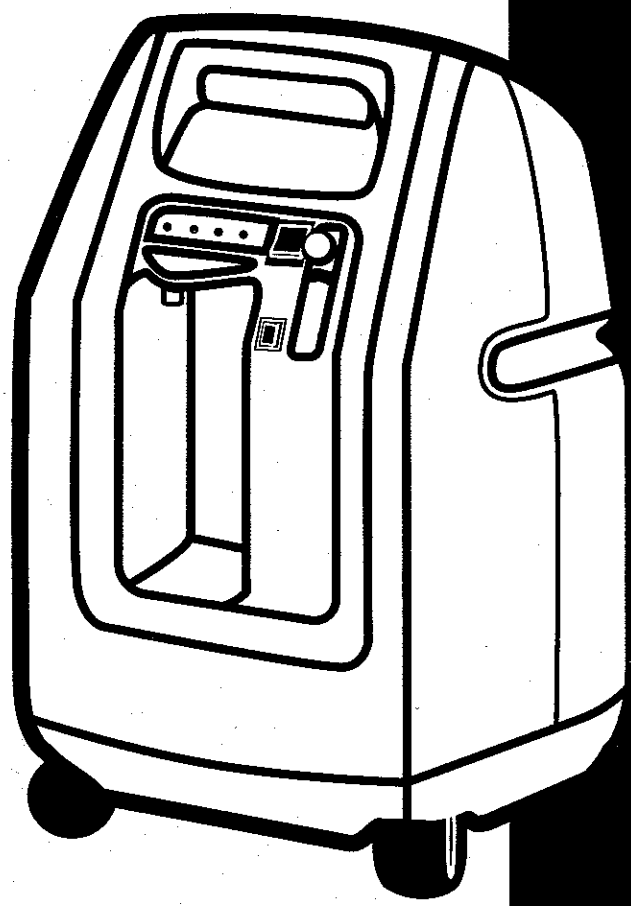
SolAiris™ III

Oxygen Concentrator Series Service Manual

Models
303DZ, 303DS,
303CZ, and 303CS



DeVILBISS
a division of
SUNRISE MEDICAL

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General Information

Introduction

This service manual was created for DeVilbiss qualified service technicians to define the proper maintenance, service, and repair procedures on the *Sol*Airis III Oxygen Concentrator. For more in-depth classroom-type training, DeVilbiss holds oxygen concentrator service schools. For service school information, contact the Service Department at 1-800-338-1988.

Warranty Information

*Sol*Airis III Limited Warranty

The *Sol*Airis III Oxygen Concentrators, manufactured and sold by DeVilbiss Health Care, Inc. are warranted as stated below. This warranty extends only to the Buyer purchasing the equipment directly from DeVilbiss, or through its Providers, Distributors, or Agents, as New equipment.

This equipment is warranted by DeVilbiss to be free from defects in workmanship and materials as stated below from date of shipment by DeVilbiss to the original purchaser:

- Valving warranted for the life of the unit.
- OSD warranted for the life of the unit (OSD models only).
- All other components warranted for three years.
- Routine maintenance items, such as filters, are excluded from Warranty.

DeVilbiss' obligation under this warranty is limited to the option of repairing at its plant or an Authorized Service Center or supplying a replacement for component part(s). To make claim under this warranty, the original purchaser must notify DeVilbiss at its plant in Somerset, PA or an Authorized Service Center. The claim will be evaluated and, if bona fide, further instructions will be issued. For component part(s) return(s), it shall be the responsibility of the provider to remove the defective component part(s), properly package in a DeVilbiss approved shipping container, properly identify by a Return Authorization Number, and to make shipment prepaid. This warranty does not cover the cost of labor incurred, either by the homecare provider or DeVilbiss, in removing or replacing the warranty component part(s). Service under this warranty must be performed by a qualified DeVilbiss provider and/or an Authorized DeVilbiss Service Center.

NOTE—This warranty does not obligate DeVilbiss to replace an oxygen concentrator that is being repaired with a loaner unit during the time of repair.

NOTE—Replacement components do not carry a new warranty and shall only be warranted for the unexpired portion of the original Limited Warranty.

This warranty shall not apply, and DeVilbiss shall be relieved of any obligation or liability if:

- This equipment is not operated and maintained in accordance with DeVilbiss operating and service instructions.
- Routine maintenance, servicing, and repair is not performed by qualified DeVilbiss service personnel.
- The equipment has been repaired or altered by the use of non-authorized parts or components (i.e., regenerated sieve material).
- The equipment fails resulting from misuse, abuse, negligence, or accident; and
- The filters that were used on the unit were not authorized DeVilbiss filters or quality filters approved by DeVilbiss.

General Information

THERE IS NO OTHER EXPRESS WARRANTY. IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THE EXPRESS LIMITED WARRANTY AND TO THE EXTENT PERMITTED BY LAW ANY AND ALL IMPLIED WARRANTIES ARE EXCLUDED. THIS IS THE EXCLUSIVE REMEDY AND LIABILITY FOR CONSEQUENTIAL AND INCIDENTAL DAMAGES UNDER ANY AND ALL WARRANTIES ARE EXCLUDED TO THE EXTENT EXCLUSION IS PERMITTED BY LAW. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, OR THE LIMITATION OR EXCLUSION OF CONSEQUENTIAL OR INCIDENTAL DAMAGE, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

DeVilbiss Labor Warranty

DeVilbiss backs up its reputation for unexcelled product quality and reliability by extending a free three-year labor warranty when the unit or components under warranty are returned to our Somerset, PA facility or an Authorized DeVilbiss Warranty Center. Repairs to units returned to our other authorized service centers are not covered by our free labor policy unless otherwise stipulated:

- Labor warranty is effective from date of shipment from DeVilbiss to original purchaser (provider).
- Routine maintenance items, such as filters, are excluded.

Optional Extended Warranty (303 Extended Warranty) Part #303EXTWAR

The Optional Extended Warranty must be selected at time of purchase. Under the Optional Extended Warranty, the equipment is warranted by DeVilbiss to be free from defects in workmanship and materials for a period of five years, except as stated below, from date of shipment by DeVilbiss to the original purchaser.

- Valving warranted for the life of the unit.
- OSD warranted for the life of the unit (OSD models only).
- Routine maintenance items, such as filters, are excluded from Warranty.

Under the Optional Extended Warranty you will receive a free five-year labor warranty when the unit or components under warranty are returned to our Somerset, PA facility. Repairs to units returned to our other authorized service centers are not covered by our free labor policy unless otherwise stipulated.

A $50 charge for the Optional Extended Warranty will be added to your invoice at billing.

Note—International warranties may vary.

General Information

Important Safeguards

Read all instruction before operating the oxygen concentrator. Important information is highlighted by these terms:

WARNING—important safety information for hazards that might cause serious injury.

CAUTION—information for preventing damage to the product.

NOTE—information to which you should pay special attention.

Safety Precautions and General Warnings

A. Federal (U.S.A.) law restricts this device to sale by or on the order of a physician.

B. Oxygen promotes rapid burning. Do not smoke when using this unit or when near a person receiving oxygen therapy. Do not operate the oxygen concentrator within a minimum of five feet from hot, sparking, or burning objects or naked flames. Do not use in rooms heated by paraffin or portable gas heaters.

C. Do not place a humidifier with an oxygen patient unless prescribed by a physician and then only a bubble-type humidifier should be used.

D. Do not connect the oxygen concentrator to an electrical outlet controlled by a wall switch; the outlet should be independent of other appliances.

E. Do not use an electrical adapter or extension cord with the oxygen concentrator.

F. Only operate the oxygen concentrator with all filters in place; do not operate if the air filter is wet.

G. Electric shock hazard. Do not remove cabinet. The cabinet may only be removed by a qualified DeVilbiss homecare provider.

H. Disconnect the power cord from the wall outlet before attempting repairs on the unit. Extra care should be taken if it is necessary to operate the unit with the cabinet removed.

I. Do not use oils, greases, or any petroleum-based solvents/cleaners on or near the unit. Use only materials that are compatible with oxygen.

J. When replacing the capacitor, do not touch the terminals or allow metal objects to come in contact with the terminals on the capacitor.

K. Use only DeVilbiss Health Care concentrator replacement parts and accessories.

L. Do not use regenerated sieve material.

Theory of Operation

An oxygen concentrator is a device that delivers highly concentrated oxygen for therapeutic applications.

Room air is a mixture of 78% nitrogen, 21% oxygen, 1% argon and other gases.

The concentrator draws in the air, separates the nitrogen from the oxygen, and allows delivery of the concentrated oxygen to the patient through the oxygen port.

Operation/Installation

*Sol*Air*is* Operation

The *Sol*Air*is* III uses a pressure-vacuum system. The air is drawn into the unit through the air filter and into a double-head compressor.

The compressed air passes through a four-way valve and is directed into one of two sieve beds. The sieve beds contain molecular sieve material which is a synthetically produced inorganic silicate. It is very porous and has the unique ability to selectively adsorb nitrogen from the air as it passes through the sieve bed.

As one bed is being pressurized and producing oxygen, a vacuum is drawn on the other bed. The vacuum process removes the nitrogen from the sieve material that was adsorbed during its pressurization cycle. The nitrogen being evacuated out of the sieve bed passes through the four-way and is released through an exhaust muffler located on the vacuum head of the compressor. Also during each bed pressurization, a small amount of oxygen flows through an orifice into the bed being evacuated. This helps purge the nitrogen from the bed.

The beds will continue to be alternately pressurized and evacuated as the unit operates. This cycling process will vary in length depending on altitude and oxygen output flow rate. (A typical cycle time at 3 LPM is approximately 8 seconds at sea level.)

Oxygen leaving the sieve beds is directed through a check valve to the accumulator tank. A pressure regulator on the tank controls the oxygen pressure as it leaves the accumulator and enters the flow meter. The flow meter allows the oxygen flow to be controlled and adjusted to the level prescribed by the patient's physician. From the flow meter, the oxygen passes through the final bacteria filter, check valve, and outlet port to the patient.

Microprocessor-Controlled Pressure-Sensing System

The *Sol*Air*is* III operates on a microprocessor-controlled pressure-sensing system to cycle the unit. The cycling is controlled and monitored by the PC board. This is accomplished by use of a pressure transducer mounted on the PC board. The transducer is connected to the accumulator tank by 1/16" diameter tubing and allows the PC board to sense the oxygen pressure and cycle time at this point.

A cycle change takes place when the pressure in the accumulator tank reaches 15 PSI. The PC board will send 12 VDC to the four-way valve causing the valve to activate. At the same time the green "4-way" indicator light on the PC board will illuminate.

With the four-way in the activated position, compressed air is directed to the left sieve bed and a vacuum is drawn on the right sieve bed. When the PC board senses 15 PSI in the oxygen accumulator tank, the PC board removes the 12 VDC from the four-way. This causes the four-way to deactivate or go to the "rest" position and compressed air is then directed to the right sieve bed and a vacuum is drawn on the left sieve bed. The green "4-way" indicator light on the PC board is not illuminated when the voltage is removed from the valve. This cycling process is repeated every time the PC board senses 15 PSI in the oxygen accumulator tank.

The PC board also activates the alarm system whenever it senses a low or high pressure condition or when the cycle time has exceeded its preset minimum or maximum limits. The alarm system will also activate in the case of a power failure and electrical or pneumatic component failure.

Operation/Installation

OSD Option

The *Sol*Air*is* III with the optional OSD (oxygen sensing device) monitors the concentration of oxygen leaving the accumulator tank. There are two additional indicator lights on the front panel.

- Normal Oxygen (green light) - oxygen levels >85% ±2%
- Low Oxygen (yellow light) - oxygen levels <85% ± 2% - requires servicing

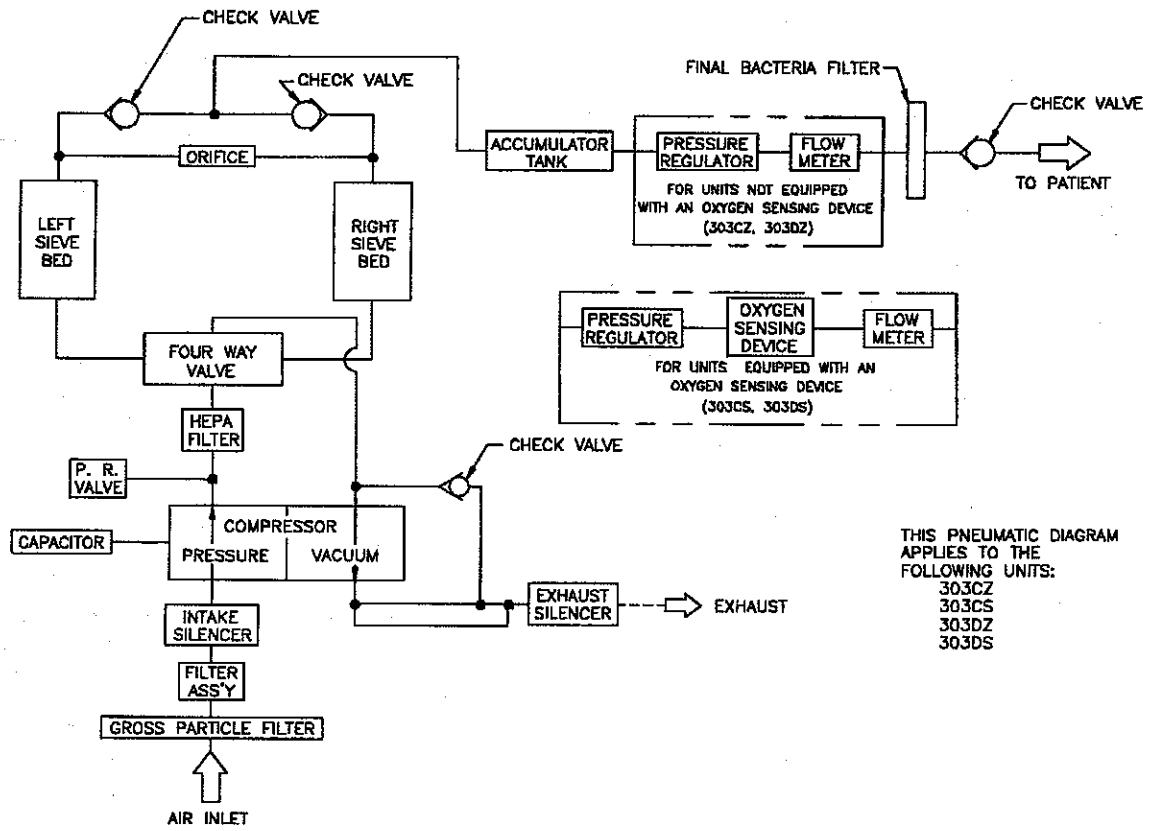
NOTE—If the oxygen level falls below 75%, an intermittent audible signal will also sound. (On the 303CS, this signal will sound if the oxygen level falls below 82%.)

*Sol*Air*is* III Overview

This service manual was designed to supply homecare providers with the proper maintenance, service, and safety procedures for the *Sol*Air*is* III oxygen concentrator. Read and understand all the information contained in this service manual before attempting to operate or perform any maintenance on the concentrator.

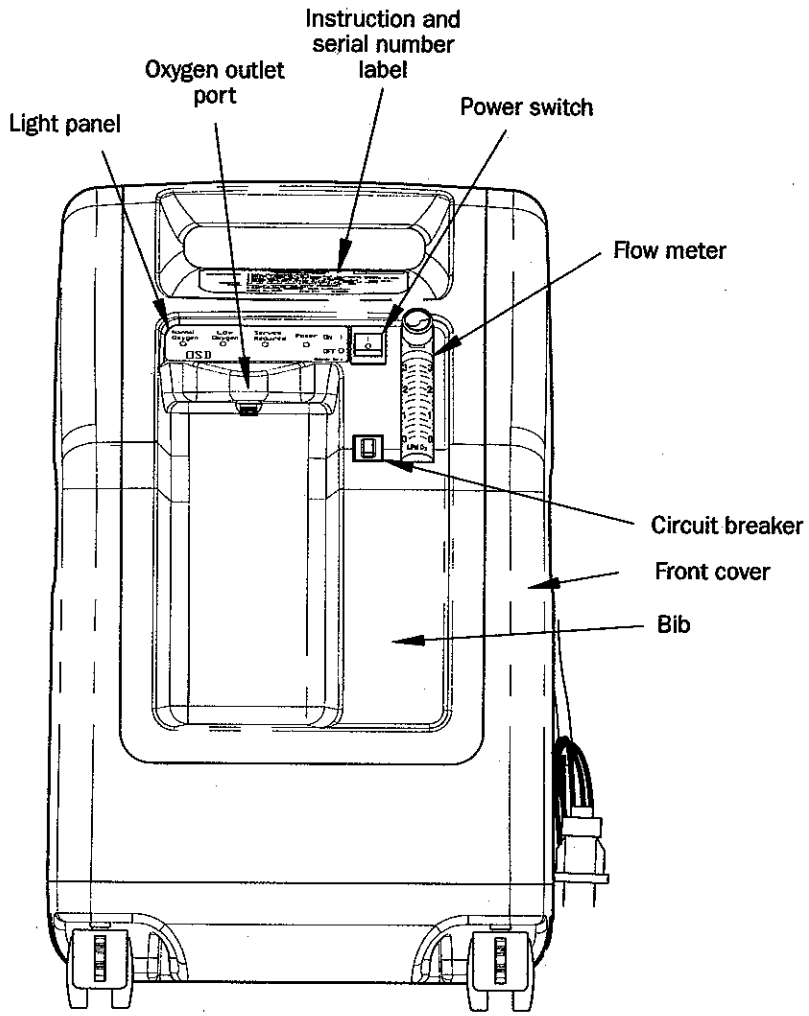
NOTE—DeVilbiss reserves the right to alter or change the design of the SolAiris oxygen concentrator series. Hence, slight differences in construction or components may exist than what is described herein.

Pneumatic Diagram



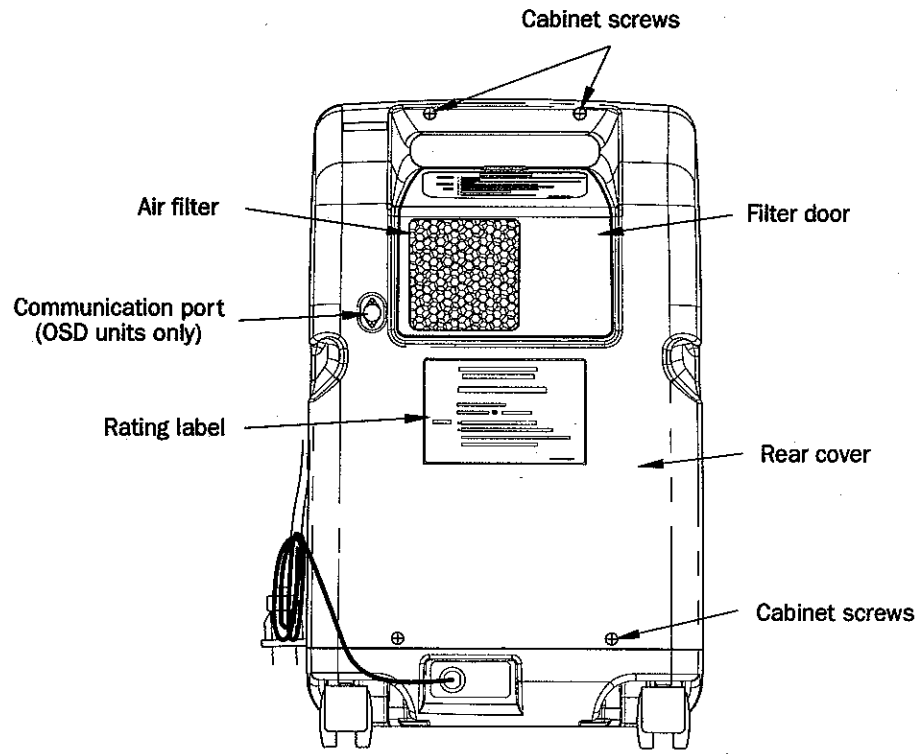
Operation/Installation

The following figures will help familiarize you with the exterior of the *Sol*Airis III concentrator.

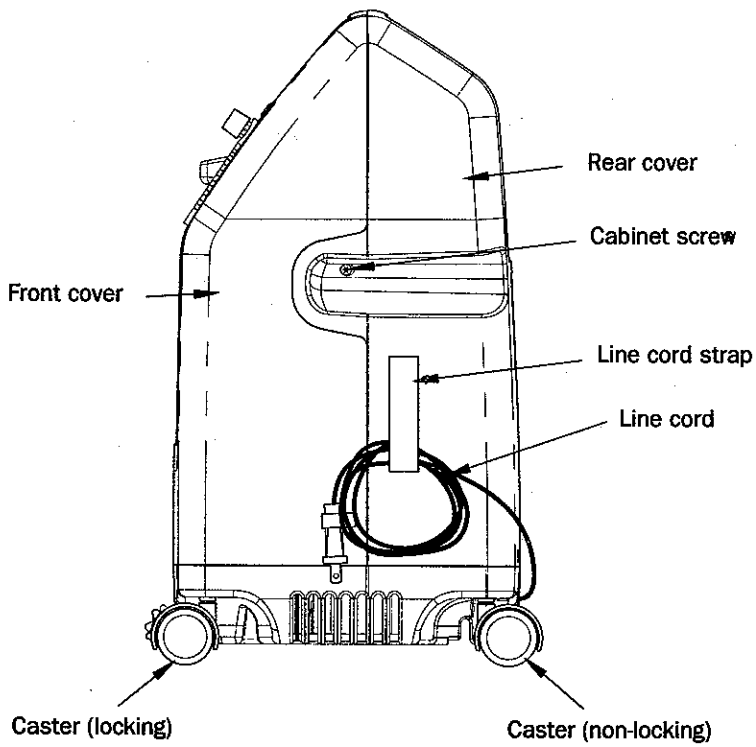


EXTERIOR FRONT VIEW **Figure 1**

Operation/Installation



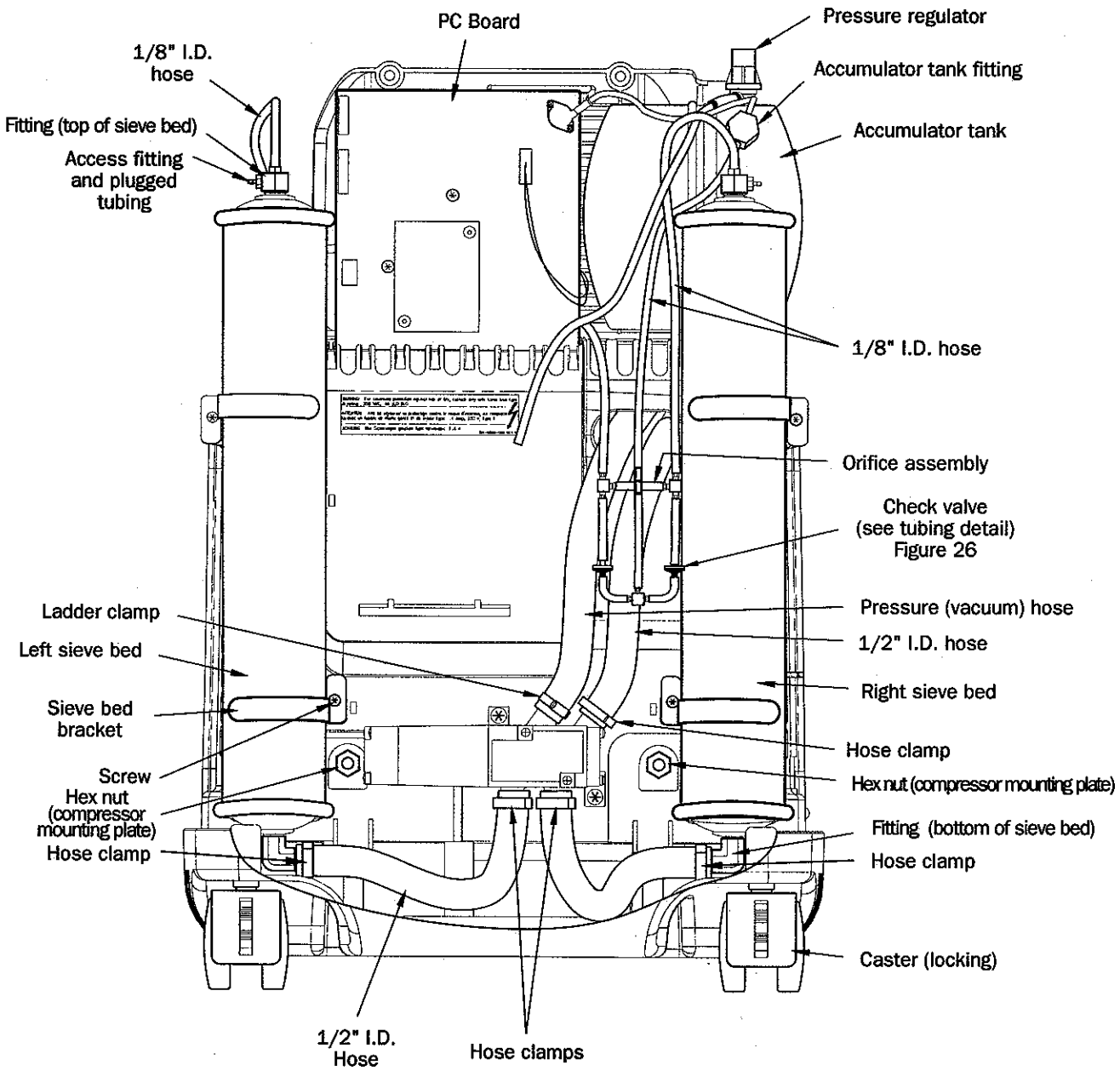
EXTERIOR BACK VIEW **Figure 2**



EXTERIOR SIDE VIEW **Figure 3**

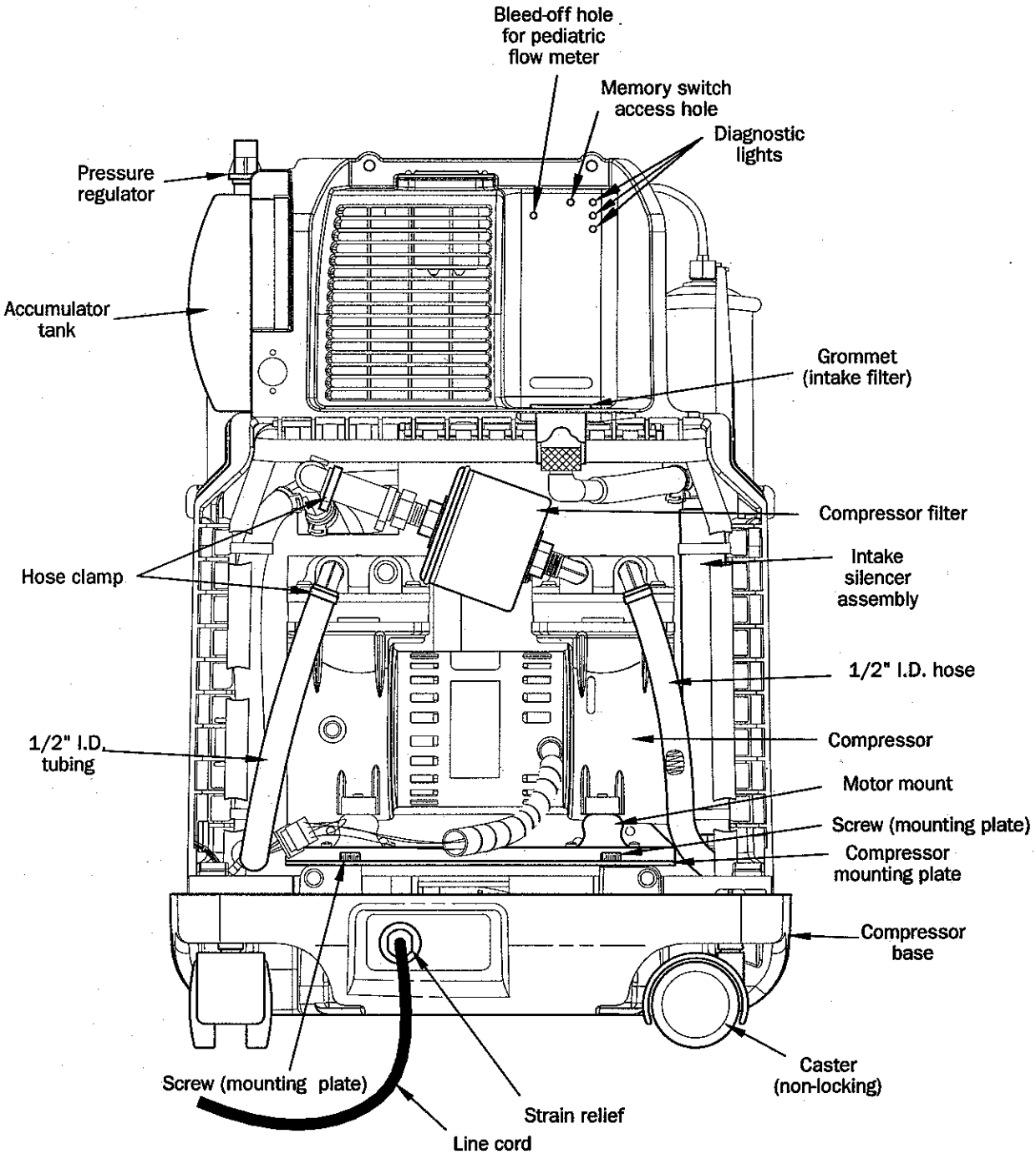
Operation/Installation

The following figures show the key internal components of the *SolAiris* III concentrator.



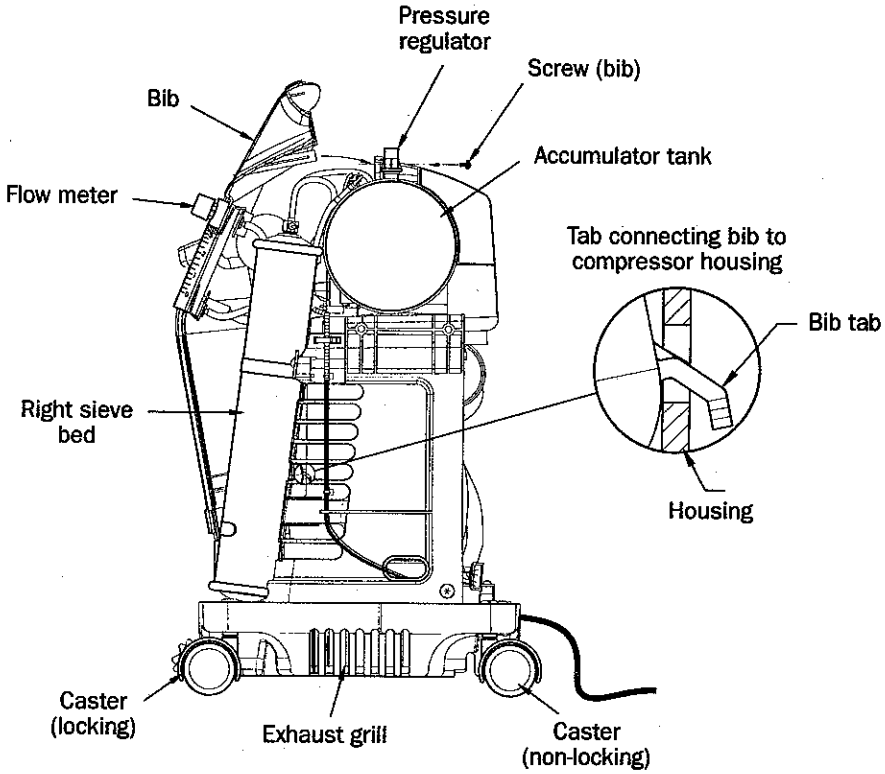
INTERIOR FRONT VIEW

Figure 4

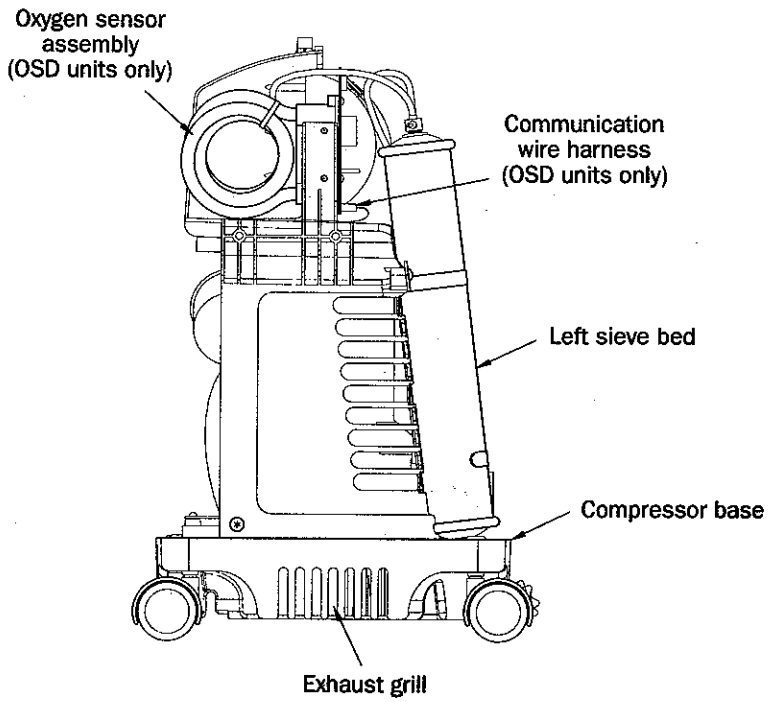


INTERIOR BACK VIEW **Figure 5**

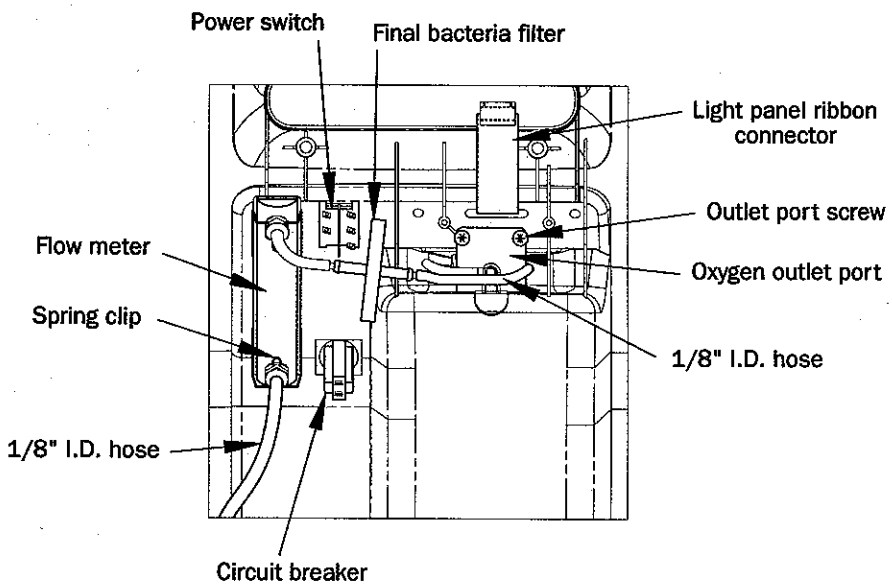
Operation/Installation



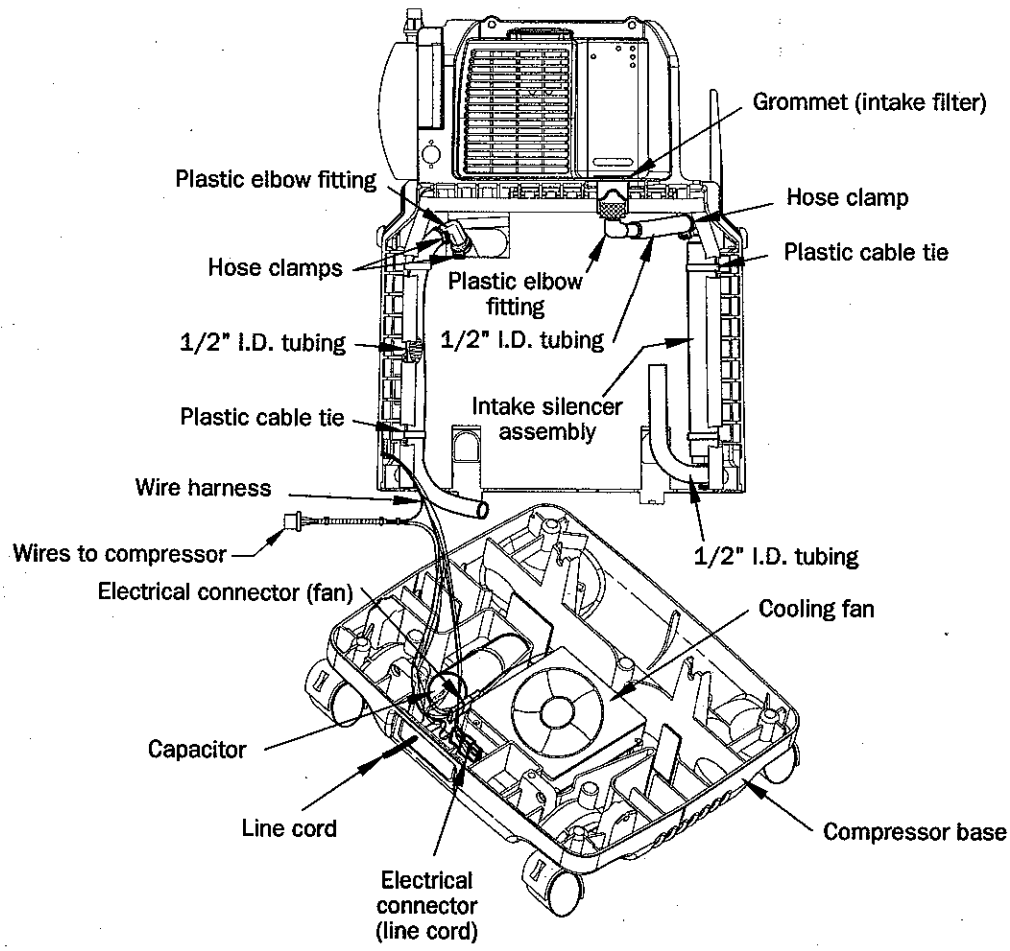
INTERIOR RIGHT SIDE VIEW **Figure 6**



INTERIOR LEFT SIDE VIEW **Figure 7**



Behind Bib **Figure 8**



Compressor Housing Area and Base **Figure 9**

Operation/Installation

Specifications

***Sol*Airis III**	
Delivery Rate	1/2 - 3 LPM (1/4 liter increments) **NOTE— It is recommended to use pediatric flow meter for flows under 1 LPM.**
Oxygen %	93% ± 3% at all liter flows
Operating System	Pressure sensing/pressure-vacuum
Sound Level	49 dBA average
Pressure	8.5 PSIG
Electrical Requirements	115V, 60 Hz (other voltage models also available)
Power Consumption	225 Watts average
Weight	*Sol*Airis III 37 lbs. *Sol*Airis III with OSD 38 lbs.
Dimensions	23"H x 13.5"W x 12"D (58.4 x 34.3 x 30.5 cm)
Safety Alarms	Audible and visual: • Power interrupt • Restricted flow • Short/no cycle • Long cycle • High pressure • Low pressure • Low oxygen (OSD models only)
Miscellaneous	• Flame-retardant cabinet material • Double insulated with two-prong polarized plug • Batteryless alarm • Pressure-relief valve & compressor thermal protection
Accessories	Pediatric flow meter (part #303PZ-619) 1/8 - 2 LPM (1/8 liter increments) Remote pediatric flow meter (part #PV5LP-627) 1/8 - 2 LPM (1/8 liter increments) Tilt handle (part #303DZ-647) Rear wheels (part #303DZ-636)

NOTE—International model specifications may vary.

Operation/Installation

Operating the *Sol*Air*is* III

1. Remove the power cord completely from the strap. Make sure the power switch is in the "Off" position.
2. Insert the plug into an electrical outlet. The *Sol*Air*is* III has a two-prong polarized plug and is double-insulated to protect against electric shock.

   NOTE—The plug on the *Sol*Air*is* concentrator has one blade wider than the other. To reduce the risk of electric shock, this plug is intended to fit in a wall outlet only one way. Do not attempt to defeat this safety feature.

   CAUTION—Improper use of the power cord and plugs can cause a burn, fire, or other electric shock hazards. Do not use the unit if the power cord is damaged.

   WARNING—Oxygen promotes rapid burning. Do not smoke when using this unit or when near a person receiving oxygen therapy. Do not operate the oxygen concentrator within a minimum of five feet from hot, sparking, or burning objects or naked flames. Do not use in rooms heated by paraffin or portable gas heaters.
3. Press the power switch to the "On" position. When the unit is turned on, the "Service Required" light will illuminate and audible signal will sound (the patient alert system) momentarily. The "Power" light also illuminates.

Only *Sol*Air*is* III Concentrators with OSD

The OSD is an optional device within *Sol*Air*is* concentrators that monitors the oxygen produced by the unit. The OSD operates as follows:

- Normal Oxygen (green light) - oxygen levels >85% ± 2%
- Low Oxygen (yellow light) - oxygen levels <85% ± 2% (requires servicing).

NOTE—If the oxygen level falls below 75%, an audible signal will sound intermittently. (On the 303CS, this signal will sound if the oxygen level falls below 82%.)

When the unit with the OSD is turned "On," all four indicator lights (Power, Service Required, Low Oxygen, and Normal Oxygen) on the front panel will briefly illuminate. After a few seconds, only the "Power" and "Normal Oxygen" lights will remain on.

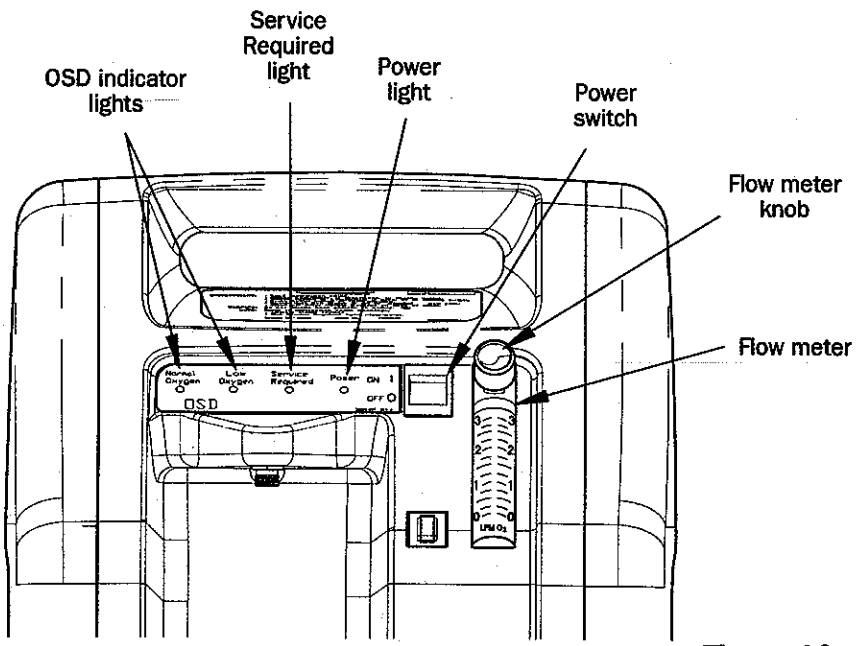


Figure 10

Operation/Installation

For the first fifteen minutes of operation, the green "Normal Oxygen" light will remain illuminated during the oxygen stabilization process. After that time, the OSD will begin monitoring the oxygen twice every second.

NOTE—If the "Service Required" light illuminates and the audible signal alarms during operation, the unit will automatically shut off. Turn the power switch "Off." Then turn the unit "On" again. If the "Service Required" light remains on, refer to the Troubleshooting Chart on page 31.

4. Slowly turn the flow meter knob until the flow meter ball is centered on the line next to the appropriate flow rate.

   NOTE—When the flow meter knob is turned clockwise, the flow decreases (and eventually will shut off the oxygen flow). When the knob is turned counter-clockwise, the flow increases.

   NOTE—If the flow meter is turned to approximately 0 LPM, it may activate the Restricted Flow Alarm. The unit will continue to run, however an intermittent audible and visible alarm may be activated.

   NOTE—Use a pediatric flow meter (part #303PZ-619 or #PV5LP-627) for flow rates under 1 LPM.

   NOTE—The unit may require up to 20 minutes for the oxygen concentration and flow rate to stabilize. The flow rate should be monitored and readjusted if necessary.

5. The flow meter has a locking device. If it is necessary to preset and lock in the prescribed flow rate, tighten the hex screw located on the hex nut just below the control knob using a 1/16" Allen bit. No adjustment can be made without loosening the hex screw.

6. The *Sol*Air*is* III oxygen concentrator is now ready for use

Performing Initial Inspection

It is suggested that an initial inspection is performed upon receiving the oxygen concentrator:

1. After removing the *Sol*Air*is* III from the carton, examine it for any external damage. If shipping damage has occurred, contact the DeVilbiss Shipping/Traffic Department at **1-800-338-1988** for specific instructions.
2. Record the number of hours on the hour meter.
3. Check to be sure the extended life filter and the air filter are in place.
4. Plug the unit into an electrical outlet, turn the unit "On," and check the audible and visible alarms.
5. Set the flow meter at 3 LPM and let the unit run for at least 20 minutes.
6. Using an oxygen analyzer, check the concentration at 3 LPM (page 19).
7. Using SMART *Track* (OSD units only) or a stop watch, check the cycle time (page 21) for each sieve bed at 3 LPM.

NOTE—If the unit fails to operate properly (i.e. oxygen concentration or cycle times are not within specification) or if internal damage is found, contact the DeVilbiss Service Department.

Operation/Installation

Suggested Patient Setup

1. Position the unit near an electrical outlet in the room where the patient spends most of his or her time.

NOTE—DO NOT connect to an electrical outlet controlled by a wall switch. The outlet should be independent of other appliances.

2. Locate the unit a minimum of five feet from fireplaces, radiators, heaters, and hot-air registers.

3. Position the unit at least six inches from walls, draperies, or any other objects that might prevent the proper flow of air in and out of the oxygen concentrator.

WARNING—Oxygen promotes rapid burning. Do not smoke when using this unit or when near a person receiving oxygen therapy. Do not operate the oxygen concentrator within a minimum of five feet from hot, sparking, or burning objects or naked flames. Do not use in rooms heated by paraffin or portable gas heaters.

WARNING—Electric Shock Hazard. Only qualified DeVilbiss homecare providers may remove the cabinet.

4. Attach the appropriate oxygen accessories (oxygen tubing or humidifier) to the oxygen outlet.

NOTE—A maximum of 50 feet of tubing (plus 3 feet cannula) is allowed between the concentrator and the patient.

Oxygen Tubing Only Connection (Figure 11):

a) Thread the Christmas tree fitting (part #CN100) onto the oxygen outlet port.

b) Attach the 5/32" I.D. oxygen tubing (part #OST07, OST15, OST25, or OST50).

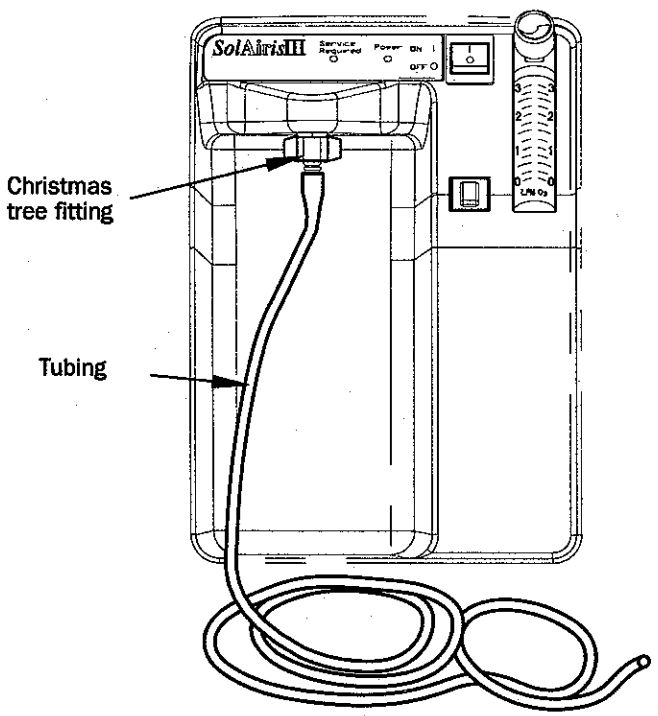


Figure 11

Operation/Installation

Oxygen Tubing With Humidification Connection (Figure 12):

If the physician has prescribed an oxygen humidifier as part of the patient's therapy, follow these steps:

a) If using a prefill go to letter b, If using a bottle, fill the humidifier bottle (part #HUM16) with distilled water. Do not overfill.

b) Thread the wing nut located on the top of the humidifier bottle to the oxygen outlet so that it is suspended. Make sure it is securely tightened.

c) Attach the 5/32 I.D. oxygen tubing (part #OST07, OST15, OST25, or OST50), not to exceed 50 feet, directly to the humidifier bottle outlet fitting.

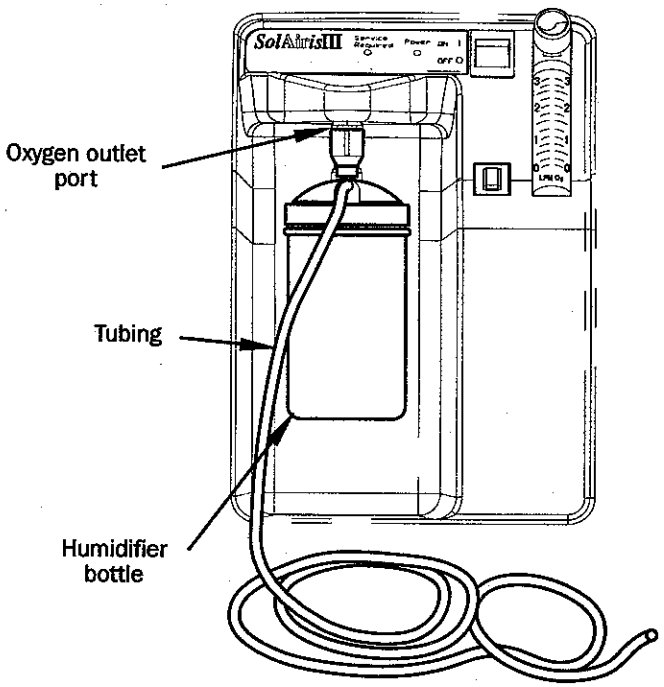


Figure 12

NOTE—For optimum performance, the *SolAiris* III has a preset nominal output pressure of 8.5 PSI. Use only "bubble-type" humidifiers. Do not use "jet-type" humidifiers.

NOTE—Condensation from the humidifier may occur in longer lengths of tubing or if the tubing is laying on a cold floor. This can be reduced by using a removable humidifier stand (part #MC44DM-509).

To use the stand:

- Attach a straight humidifier adapter fitting (part #444-506) to the bottle by turning the wing nut on the humidifier until it is tight on the fitting.
- Secure the bottle in the strap.
- Attach one end of the oxygen tubing to the oxygen outlet on the unit and the other end to the plastic adapter fitting on the humidifier. Locate the humidifier near the patient.

5. Attach the nasal cannula (part #CANOO), catheter, or face mask to the oxygen tubing (per the manufacturer's directions).

6. Follow the Operating Instructions on page 15.

Maintenance

Routine Patient Maintenance

The oxygen patient should perform the following maintenance.

Oxygen Humidifier (reusable bottles only)
The patient should clean the humidifier bottle daily. The patient should follow the instructions supplied by the manufacturer. If no cleaning instructions were supplied, these steps should be followed:

1. Wash the humidifier bottle in a solution of hot water and dishwashing detergent.
2. Soak the humidifier in a solution of one part white vinegar to three parts hot water for 30-45 minutes. This solution acts as a germicidal agent.
3. Rinse thoroughly with hot tap water and refill with distilled water for use. Do not overfill.

Cannula/Mask and Tubing
The patient should clean and replace the cannula and tubing as instructed by the manufacturer.

Air Filter
The air filter should be cleaned at least once a week by the patient. To clean the air filter these steps should be followed:

1. Remove the air filter, located on the back of the unit.
2. Wash the air filter in a solution of warm water and dishwashing detergent.
3. Rinse thoroughly with warm tap water and towel dry. The filter should be completely dry before reinstalling.

WARNING—Do not attempt to operate the unit without the air filter or while the filter is still damp.

NOTE—The air filter should be monitored more closely in environments with abnormal amounts of dust, lint, and power.

NOTE—Operation of the SolAiris III concentrator in extreme environments or without the air filter will prematurely occlude the extended life intake bacteria filter and cause a decrease in the unit performance.

Exterior Cabinet
The patient should clean the concentrator exterior cabinet by using a damp cloth or sponge with a mild household cleaner and wipe it dry.

WARNING—Do not apply liquid directly to the cabinet or utilize any petroleum-based solvents or cleaning agents.

Periodic Homecare Provider Preventative Maintenance

Every *Sol*Air*is* III oxygen concentrator is thoroughly tested and burned-in at the factory. To assure continued trouble-free performance, the following preventative maintenance should be performed by the homecare provider during periodic oxygen patient visits. Failure to properly maintain the unit will void the warranty.

***Sol*Air*is* III Recommended Preventative Maintenance (PM)**

A. Check oxygen concentration* with an oxygen analyzer (part #O2ANA) - every 3 months for non-OSD models and once a year for OSD models.

To verify the oxygen concentration:

1. Calibrate the oxygen analyzer prior to checking the oxygen concentration. The analyzer should be properly calibrated using the manufacturer's recommended procedure.

NOTE—Changes in temperature, altitude, or humidity may affect the analyzer's oxygen concentration reading. The analyzer should be calibrated in similar conditions to the location of the concentrator.

Maintenance

2. The concentrator must operate for a minimum of 20 minutes before checking the oxygen concentration.
3. Connect the analyzer to the unit's oxygen outlet port and wait until the display stabilizes.
4. Record the reading.

B. Check the audible alarm and indicator lights - once a year. When the power switch is turned "On," listen for the audible alarm and check to see if the front panel indicator lights are operating.

C. Change Extended Life Intake Bacteria Filter (part #MC44D-605) - once a year.

To change the filter:

1. Open the filter door.
2. Pull the extended life filter out from the rubber grommet (Figure 13) and discard.
3. Place the current date and hours of operation on the label of a new extended life filter.
4. Securely insert the new extended life filter into the grommet and close the filter door.

NOTE—If the DeVilbiss Extended Life Intake Filter is not used, the following filters may be substituted. Note the different PM schedules.

- Round Felt Pre-Filter (part #444-503) - change once a month OR
  Rectangular Felt Pre-Filter (part #MC44D-722) - change every three months
  AND
- Intake Bacteria Filter (part #444-504) - change every six months

D. Change Final Bacteria Filter (part #PV5LD-651) - every two years.

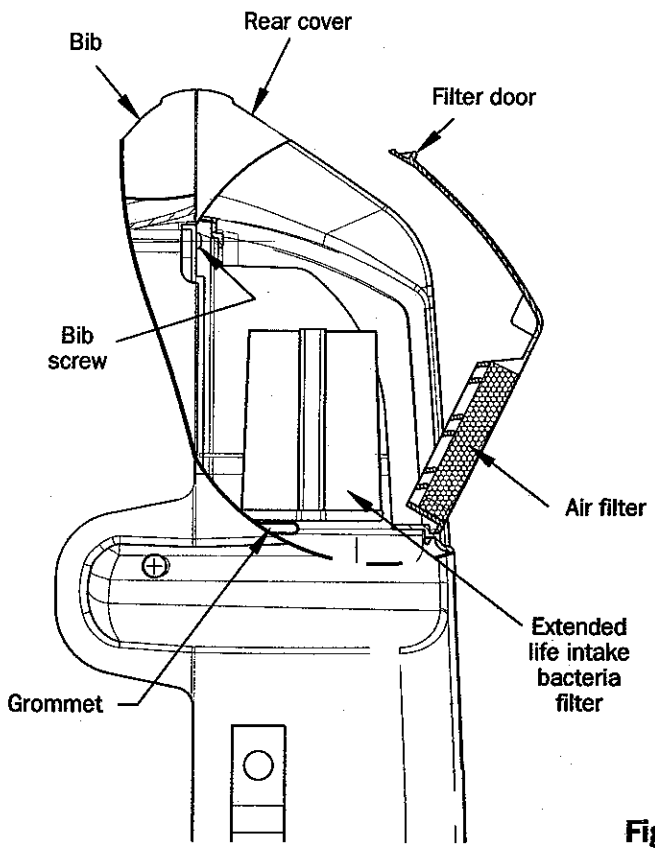


Figure 13

Maintenance

To change the final bacteria filter:

1. Unplug the unit and remove the cabinet (see page 34).
2. Remove the hose from each end of the filter (Figure 14).

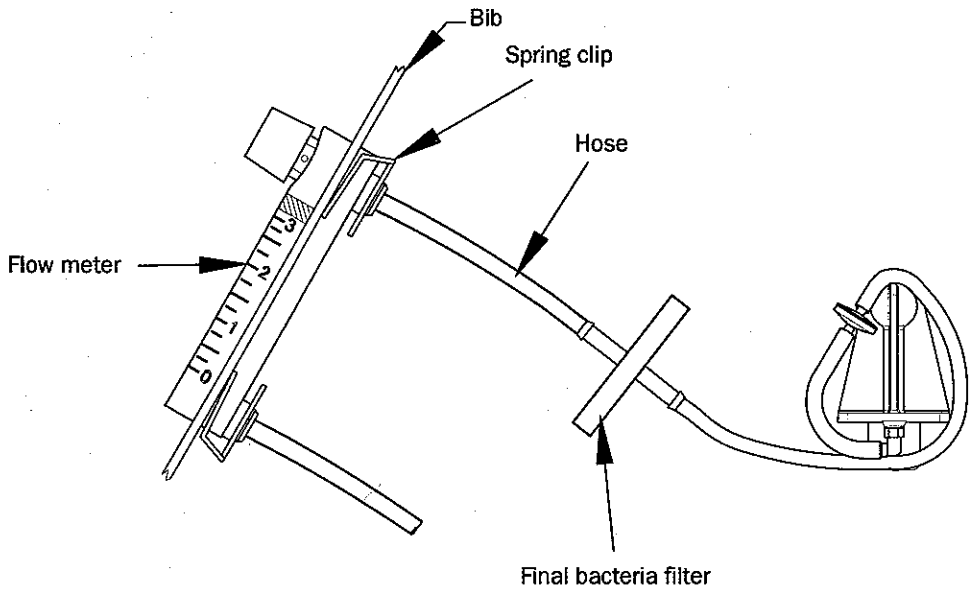


Figure 14

3. Discard the filter.
4. Install the new final filter with "IN" fitting toward flow meter.

E. Recommended Compressor Cycle Time Check - prior to or at three years or 12,000 hours of operation (whichever comes first). Monitor the unit cycle times (using SMART *Track* or a stop watch) and if longer than normal cycle times exist (refer to page 27 for normal cycle times) with no leaks, inspect and change internal components as needed.

NOTE—Increases in altitude and flow rate will slightly increase cycle times and decreases in the two variables will slightly decrease cycle times. Cycle times at various altitudes are as follows:

Sea Level - approximately 8 seconds at 3 LPM
2500 feet - approximately 10 seconds at 3 LPM
5000 feet - approximately 11 seconds at 3 LPM

F. Change Exhaust Silencer - when the compressor is rebuilt or replaced.

To change the exhaust silencer (Figure 33):

1. Remove the hose clamps and tubing from the exhaust silencer.
2. Install tubing on the new silencer, and secure with hose clamps.

G. Change Compressor HEPA Filter - every five years or 25,000 hours of operation (whichever comes first).

To replace the compressor HEPA filter:

1. Unplug the unit and remove only the rear cabinet (refer to page 34).
2. Loosen hose clamp and remove the hose from the outlet fitting end of the HEPA filter.
3. Using a wrench, unscrew the HEPA filter from the compressor head.
4. Discard the HEPA filter.

Maintenance

NOTE—Teflon tape or LOX-8 paste should be applied to the compressor fitting prior to installation of HEPA filter.

5. Install the new HEPA filter by using a wrench to attach the filter to the compressor head until tight.

NOTE—Make sure the filter end marked "IN" is toward compressor.

6. Attach the hose to the outlet fitting end of the filter and secure with hose clamp.
7. Leak test the HEPA filter fittings. Apply the leak test solution (such as Epi-Seal® LEAK-SEEK®) to fittings and connections with the unit running. If an air leak is present, the solution will bubble.

* The Preventative Maintenance Schedule stated above reflects a normal, clean operating environment. The homecare provider is responsible for determining the condition of the concentrator operating environment and determining a preventative maintenance interval frequency (not to exceed three months on non-OSD models or one year on OSD models) which takes into consideration the specific operating environment.

Between Patient Maintenance

A. Discard oxygen tubing, cannula, humidifier bottle, intake bacteria filter and felt pre-filter (if using these filters instead of the extended life intake bacteria filter).

B. Wash or replace the air filter.

C. Check oxygen concentration. If the unit falls within 93% ± 3% at 3 LPM, the extended life intake bacteria filter does not need to be replaced between patients (but must be changed annually).

Epi-Seal® LEAK-SEEK® is a registered trademark of Bonded Products, Inc.

Patient Alert & Diagnostic System

Patient Alert System

The *Sol*Air*is* III patient alert system will detect unit component failure as well as restricted flow situations. This system is comprised of both visible and audible alarms which signal the patient if a malfunction should occur.

The diagnostic lights on the PC board will help service personnel diagnose the cause of the malfunction.

The visible alarm located on the front panel reads "Service Required." The audible alarm system is internally powered; no batteries are required. When the indicator lights illuminate or the audible alarm sounds, other than during unit start-up, a problem has occurred such as:

- low/high pressure
- minimum/maximum cycle
- valve failure
- bed failure
- compressor failure
- restricted flow (blinking visible alarm and pulsing audible alarm)
- power fail (blinking visible alarm and pulsing audible alarm)

The visible and audible alarms will activate for approximately 20 minutes in a no power situation. If the unit is turned "On" and not plugged in, no alarm will sound for the first 10 seconds. After that time, the alarm will produce an audible pulse and the visible alarm will blink every few seconds.

NOTE—If the concentrator has been unused for an extended period, the unit must run several minutes before the power fail alarm will activate.

The printed circuit (PC) board is responsible for monitoring and controlling the entire system as well as the alarms by using a pressure transducer. When the pressure sensed by the pressure transducer indicates a malfunction, the patient alert system will activate regardless if it is a pressure or component failure. Alarms will also be activated if the system fails to operate within the preset minimum and maximum cycle times. The alarm system cannot be overridden. Most major malfunctions will shut the unit off automatically, preventing any further damage to the unit.

Patient Alert & Diagnostic System

Diagnostic System

The PC board has three red diagnostic lights (Figure 15). Should a unit malfunction occur, the unit will shut off, and these lights will illuminate in a particular sequence. The diagnostic lights should be used as a troubleshooting aid in conjunction with the pressure-vacuum gauges (refer to page 43) because there may be more than one reason for a malfunction.

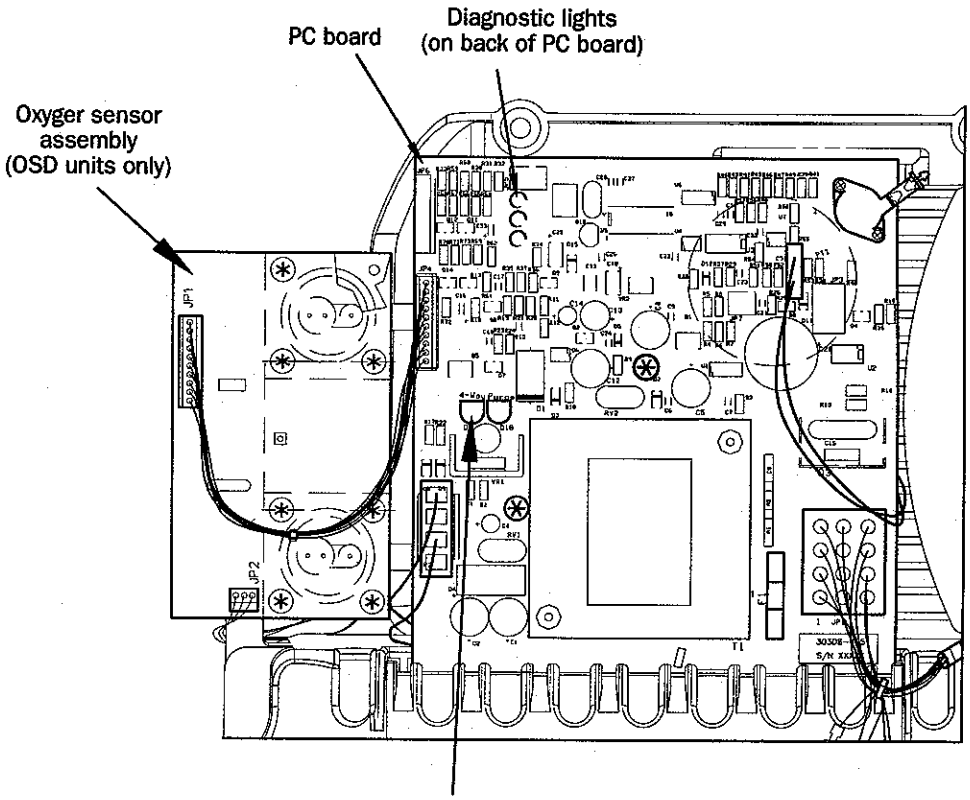


Figure 15

Patient Alert & Diagnostic System

The diagnostic system will also keep the last diagnostic light failure sequence in memory. This gives the service technician the ability to view the cause of a unit shutdown after the unit has been turned off.

To view the light sequence corresponding to the unit malfunction without opening the unit:

1. Turn the unit "On."
2. Open the air filter door.
3. Use the plastic error indicator tool (part #303DZ-635) or other non-metallic tool to press and release the Memory Switch "S" through the single access hole located to the left of the three vertical diagnostic light access holes (located on the PC board). The PC board will display the light sequence for the last failure mode (unless the memory has been cleared).

WARNING—Electric Shock Hazard. Do not use metal or other conductive tools when pressing the memory switch; doing so may cause personal injury and product damage.

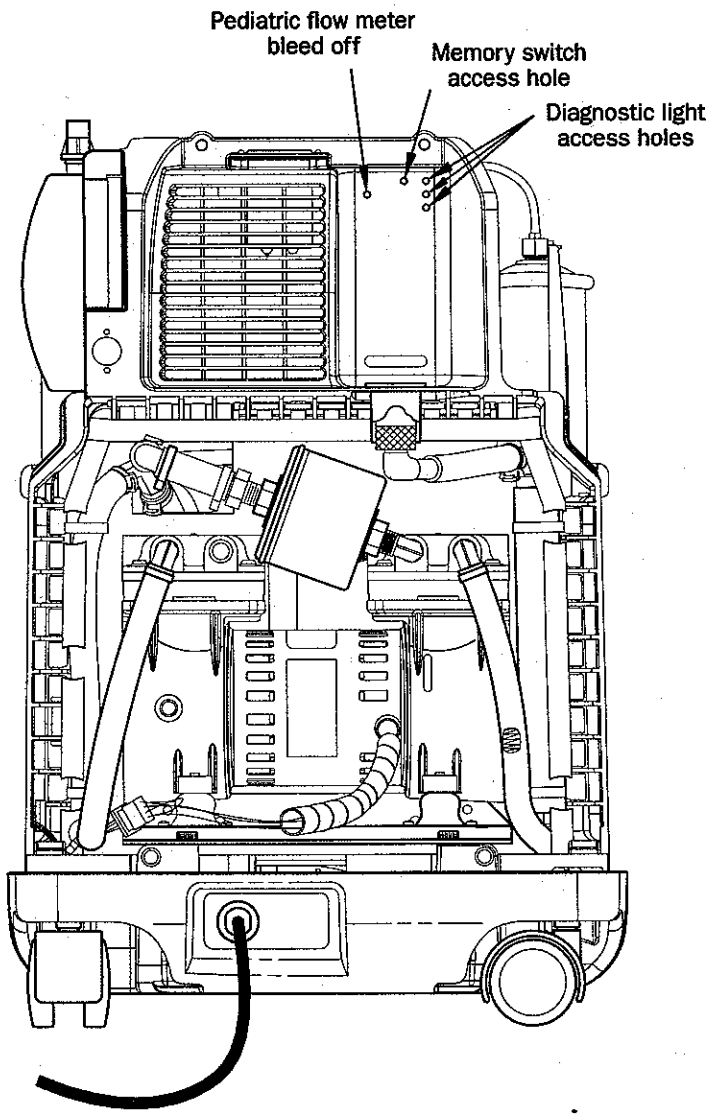


Figure 16

Patient Alert & Diagnostic System

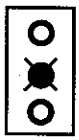
After viewing the light sequence, the memory may be cleared for future assistance.

To clear the diagnostic light memory:

1. Unplug unit while still running. Do not turn the unit "Off." Do not plug the unit back into the wall outlet until the first alarm sounds (approximately 10 seconds).
2. Plug unit back into the wall outlet. This process will reset diagnostic light memory.

IMPORTANT

Shown below are the failure combinations for the diagnostic service lights(top to bottom) and their respective meanings. It is extremely beneficial to attach pressure gauges to the sieve bed test points. (Refer to Normal Operating Sequence on page 27).

HIGH PRESSURE A POSSIBLE CAUSE: 4-WAY VALVE, PC BOARD (VOLTAGE TO 4-WAY)	**HIGH PRESSURE** POSSIBLE CAUSE: SAME AS 'A' (NO 4-WAY VOLTAGE)
LONG CYCLE A POSSIBLE CAUSE: LEAK, WORN COMPRESSOR (VOLTAGE TO 4-WAY)	**LONG CYCLE** POSSIBLE CAUSE: SAME AS 'A' (NO 4-WAY VOLTAGE)
SHORT CYCLE A POSSIBLE CAUSE: SIEVE BEDS (VOLTAGE TO 4-WAY)	**SHORT CYCLE** POSSIBLE CAUSE: SAME AS 'A' (NO 4-WAY VOLTAGE)
PC BOARD FAILURE POSSIBLE CAUSE: WIRE HARNESS, DEFECTIVE ELECTRONIC COMPONENT.	 AN UNEVEN CYCLE TIME **DURING OPERATION** POSSIBLE CAUSE: LEAK, CROSS PORT VALVE LEAKAGE

NOTE—These alarms will illuminate when unit shuts off and can be observed when unit it turned off and on again by depressing and releasing switch "S" while unit is running.

When a system error is sensed, the compressor will automatically shut off, but the cooling fan will continue to run. The audible alarm will also sound and the "Service Required" light on the control panel will illuminate.

NOTE—The green "4-way" indicator light on the PC board will illuminate only when the four-way valve is activated. At the same time the left sieve bed should be pressurizing. When it is off, the right bed should be pressurizing. This light is not considered an alarm indicator.

Troubleshooting

Normal Operating Sequence of the *SolAiris* III Series

NOTE—Most types of unit malfunctions will cause a deviation in this sequence and possibly a change in cycle times or a unit shutdown.

When the concentrator is turned "On," this normal cycling sequence should be observed by attaching the pressure-vacuum gauges to the sieve bed test points located at the top of the unit.

1. Left sieve bed will pressurize (approximately 15 PSI) and right bed will have a vacuum drawn (approximately 11 in. Hg).
   a) Four-way valve is shifted.
      1) Approximately 12 VDC is supplied from PC board to the four-way and the green "4-way" indicator light is illuminated on the PC board.
2. Right sieve bed will pressurize (approximately 15 PSI) and left sieve bed will have a vacuum drawn (approximately 11 in. Hg).
   a) Four-way valve is in the rest position.
      1) There is no 12 VDC signal at the four-way and the green "4-way" indicator light on the PC board is not illuminated.
3. Step 1 is repeated again.

NOTE—Increases in altitude and flow rate will slightly increase cycle times and decreases in the two variables will slightly decrease cycle times. Cycle times at various altitudes are as follows:

- **Sea Level - approximately 8 seconds at 3 LPM**
- **2500 feet - approximately 10 seconds at 3 LPM**
- **5000 feet - approximately 11 seconds at 3 LPM**

Simplified Troubleshooting

The key to simple troubleshooting is to recognize which type of problem exists and select the most effective approach to solving the problem. The different types of problems and the approaches for solutions are as follows:

Type I-Unit runs for a while and shuts off.

Approach-Connect the pressure-vacuum gauges to the sieve bed test points and look for the proper cycling sequence. If something in the sequence is incorrect, troubleshoot the appropriate components (i.e. if the right bed pressurizes first, troubleshoot the four-way valve).

Type II-Power switch is in the "On" position and "Power" indicator light is illuminated, cooling fan runs, but compressor will not start.

Approach-Check the compressor voltage (115 VAC) (Figure 32).

- If voltage is present, then a defective capacitor or compressor exists.

WARNING—Mechanical Hazard. Keep fingers, loose clothing, etc. away when working on compressor.

- If voltage is not present, then a defective wire harness or PC board exists.

Troubleshooting

Type III-The unit is operating and continues to cycle, but has low oxygen concentration.

Approach-Check cycle times.

- If cycle times are shorter than normal, check for:
  - ✓ defective sieve beds
- If cycle times are longer than normal, check for:
  - ✓ occluded filters or
  - ✓ system leaks or
  - ✓ defective compressor or
  - ✓ malfunctioning sieve bed check valves

NOTE—Check for leaks using a certified leak detection solution. Apply leak test solution to all fittings and hose connections with unit running. If an air leak is present, the solution will "bubble-up." All leaks should be repaired before putting the unit back in service.

- If cycle times are normal, check for an oxygen leak:
  - ✓ top of the sieve beds
  - ✓ accumulator tank
  - ✓ pressure regulator
  - ✓ flow meter
  - ✓ final bacteria filter
  - ✓ outlet port
- If cycle times are normal and no oxygen leaks exist, then connect the pressure-vacuum gauges and look for proper vacuum levels.
  - ✓ If vacuum reading is low, the compressor may be defective.

Troubleshooting

A.

Symptom			
Visible Alarm	**Audible Alarm**	**Compressor**	**Power Light**
OFF	**OFF**	**ON**	**ON**

	Other Symptoms	Possible Cause	Possible Remedy
1.	Pulsating air noise.	1. Intake filter not in place or defective. 2. Compressor intake hose disconnected.	1. Check filter and replace if necessary. 2. Reconnect hose.
2.	Excessive noise and/or vibration.	1. Defective or loose motor mounts. 2. Defective compressor. 3. Defective cooling fan.	1. Replace or tighten motor mounts. 2. Replace compressor. 3. Replace cooling fan.
3.	Fluctuating oxygen flow.	1. Occluded humidifier. 2. Use of improper humidifier. 3. Occluded filters. 4. Occluded or defective cannula and tubing. 5. Use of excessive tubing. 6. Defective flow meter. 7. Leak in system. 8. Defective compressor. 9. Defective compressor reed valve. 10. Defective sieve bed check valve. 11. Pressure regulator not adjusted properly or defective.	1. Clean or replace humidifier. 2. Use only a bubble-type humidifier. 3. Clean or replace filters. 4. Detach cannula from oxygen delivery tubing. If proper flow is not attained, check tubing for kinks or other obstructions. Clean or straighten as required or replace tubing if necessary. 5. The unit is designed to deliver 3 LPM on 50 feet (15 meters) and 3 feet of cannula of approximately 5/32" (4 mm) inside diameter tubing. Smaller diameter tubing or the addition of any other flow restriction may prevent obtaining the desired flow rate. 6. Replace flow meter. 7. Check all hoses and fittings. 8. Replace compressor. 9. Replace compressor reed valve. 10. Replace check valve. 11. Adjust or replace pressure regulator.
4.	Little or no oxygen flow.	1. Flow meter not adjusted properly 2. Hose disconnected to flow meter. 3. Oxygen delivery tubing is kinked or blocked. 4. Occluded humidifier.	1. Adjust flow meter. 2. Reconnect hose. 3. Straighten tubing or remove obstruction. 4. Clean or replace humidifier.
5.	Low oxygen concentration and possible increase in cycle time.	1. Occluded filters. 2. Leak in system. 3. Defective sieve bed check valve. 4. Defective compressor reed valve. 5. Defective compressor. 6. Four-way valve not fully shifted.	1. Clean or replace filters. 2. Check all hoses and fittings. 3. Replace check valve. 4. Replace compressor reed valve. 5. Replace compressor. 6. Clean or replace four-way valve.
6.	Low oxygen concentration and decrease in cycle time.	1. Contaminated sieve beds. 2. Compressor vacuum head problem (broken reed valve defective dump check valve or exhaust silencer occluded).	1. Replace sieve beds. 2. Check vacuum head reed valve, dump check valve, exhaust silencer.

Troubleshooting

B.

Symptom			
Visible Alarm	**Audible Alarm**	**Compressor**	**Power Light**
OFF	**OFF**	**ON**	**ON**

	Other Symptoms	Possible Cause	Possible Remedy
1.	Audible alarm does not sound when unit is turned on or during power failure. **NOTE-If the concentrator has been unused for an extended period, the unit must run several minutes before the power fail alarm will activate.**	1. Unit has not been used for an extended period of time. 2. Defective PC board. 3. Defective power switch. 4. Defective wire harness.	1. Allow unit to run for 20 minutes and retry. 2. Replace PC board. 3. Replace power switch. 4. Replace wire harness.
2.	"Service Required" light does not illuminate when unit is turned on.	1. Defective PC board. 2. Defective light panel.	1. Replace PC board. 2. Replace light panel.

C.

Symptom			
Visible Alarm	**Audible Alarm**	**Compressor**	**Power Light**
Blinking	**Pulsing**	**ON**	**ON**

	Other Symptoms	Possible Cause	Possible Remedy
1.	No oxygen flow.	1. Severe restriction of flow due to: a. Crimped tubing. b. Occluded humidifier. c. Flow meter turned off or set too low.	1a. Straighten tubing. b. Clean or replace humidifier. c. Adjust flow meter.

D.

Symptom			
Visible Alarm	**Audible Alarm**	**Compressor**	**Power Light**
Blinking	**Pulsing**	**OFF**	**OFF**

	Other Symptoms	Possible Cause	Possible Remedy
1.	Fan operating, no indicator lights illuminated on PC board.	1. Blow fuse on PC board. 2. Defective PC board.	1. Replace fuse. 2. Replace PC board.
2.	Fan off.	1. Line cord not properly installed or defective. 2. Oxygen concentrator circuit breaker activated. 3. No power at receptacle. 4. Line cord quick-connect terminal inside unit is disconnected. 5. Defective power switch. 6. Defective circuit breaker.	1a. Insert plug in receptacle. b. Replace line cord. 2. Press the unit circuit breaker reset button. If unit circuit breaker opens again, check internal wiring. 3a. Check building circuit breaker or fuse, or have house wiring checked by qualified electrician. b. Circuit may be fully loaded with other appliances and another receptacle may be required. 4. Reconnect quick-connect terminal. 5. Replace power switch. 6. Replace unit circuit breaker.

Troubleshooting

E.

Symptom			
Visible Alarm	**Audible Alarm**	**Compressor**	**Power Light**
ON	**ON**	**OFF**	**ON**

	Other Symptoms	Possible Cause	Possible Remedy
1.	Fan operating.	1. Compressor connector disconnected/ defective. 2. Defective capacitor. 3. Defective PC board. 4. Defective compressor.	1. Reconnect/replace. 2. Replace capacitor. 3. Replace PC board. 4. Replace compressor.
2.	Unit warm to the touch and cannot be restarted for several minutes.	1. Compressor overheated due to: a. Occluded filters. b. Restricted input or output air passage. c. Low or high line voltage. 2. Defective cooling fan. 3. Defective compressor.	1a. Clean or replace filters. b. Remove obstruction. c. Check line voltage, use alternate circuit independent of other appliances. 2. Replace cooling fan. 3. Replace compressor.
3.	Fan operating, middle or middle and bottom diagnostic lights illuminated on PC board.	1. Four-way valve failed to shift properly. 2. Contaminated sieve beds.	1. Refer to page 51 on How to Troubleshoot Four-Way Valve. 2. Refer to page 43 on How to Troubleshoot Sieve Beds.
4.	Fan operating, top or top and bottom diagnostic lights illuminated on PC board.	1. Maximum cycle time was exceeded due to: a. Four-way valve not fully shifted. b. Leak in system. c. Defective compressor reed valve. d. Defective compressor.	1a. Clean or replace four-way valve. b. Check all hoses and fittings. c. Replace compressor reed valve. d. Replace compressor.
5.	Fan operating, top and middle or all three diagnostic lights illuminated on PC board.	1. Four-way valve not shifting. 2. Defective PC board.	1. Refer to page 51 on How to Troubleshoot Four-Way Valve. 2. Replace PC board.
6.	Fluctuating or no flow.	1. System pressure below 9 PSI due to: a. Leak in system. b. Defective compressor. c. Four-way valve not fully shifted.	1a. Check all hoses and fittings. b. Replace compressor. c. Clean or replace four-way valve. **NOTE—When unit runs for a short time and stops and any of the red diagnostic lights illuminate, connect gauges and look for proper operating sequence.** **NOTE—Refer to page 26 for explanations of the various diagnostic lights and alarms.**

F.

Symptom			
Visible Alarm	**Audible Alarm**	**Compressor**	**Power Light**
BLINKING	**PULSING**	**OFF**	**ON**

	Other Symptoms	Possible Cause	Possible Remedy
1.	Fan operating.	1. Defective PC board.	1. Replace PC board.

Troubleshooting

OSD Troubleshooting

A.

Symptom			
Visible Alarm	Audible Alarm	Compressor	Power Light
ON	ON	OFF	ON

	Other Symptoms	Possible Cause	Possible Remedy
1.	No OSD lights are illuminated.	1. Defective OSD.	1. Replace OSD.
2.	Both OSD lights are illuminated.	1. Connector off between OSD and PC board. 2. Defective OSD.	1. Reconnect connector. 2. Replace OSD.
3.	Yellow Low Oxygen light is illuminated.	1. Oxygen level is below 85%.	1. Check concentration with an oxygen analyzer. If the concentration is within specification, replace the OSD. If the concentration is below 85% refer to Numbers A5 and A6 in the Unit Troubleshooting Chart.
4.	Yellow Low Oxygen light is illuminated and an intermittent audible alarm sounds.	1. Oxygen level is below 75% (below 82% on 303CS)	1. Check concentration with an oxygen analyzer. If the concentration is within specification, replace the OSD. If the concentration is below 75% (82% on 303CS), refer to Numbers A5 and A6 in the Unit Troubleshooting Chart.

Component Testing, Repair, & Replacement

Proper Repair Procedures

The *SolAiris* III oxygen concentrator is designed for ease of service. To aid service personnel, a Service Kit (part #444-501) is available which contains the necessary gauges, tools, and testing instruments to properly service the oxygen concentrator. On parts that are sold separately, the part number is indicated in parenthesis.

The following parts are included in the Service Kit.

Service Kit

(1) Slotted bit

(1) #1 Phillips bit

(1) #2 Phillips bit

(1) 7/16" Socket 1/4" Drive

(1) Crescent wrench

(1) 8" Duckbill pliers

(1) 5/32" Allen bit

(1) 9/64" Allen bit

(1) 7/64" Allen bit

(2) 0-30 PSI 0-30 in. Hg gauge and hose (part #PVO2D-602)

(1) Tool box

(2) Pressure test assembly (part #444-502)

(1) Torx screwdriver w/bits (part #MC44D-712)

(1) AC/DC test light (part #PVO2D-603)

(1) 1/4" Ratchet wrench

(1) 3 mm Hexbit

(1) T-15 Torx "L" wrench

(1) 10 mm Socket 1/4" Drive

(1) 1/4" Drive extension

(1) Plastic storage case

(1) Plastic error indicator tool (part #303DZ-635)

In addition to the Service Kit, an oxygen analyzer (part #O2ANA) is needed to periodically check oxygen concentration levels. A volt meter will be needed for more accurate voltage testing.

NOTE—Be sure to read all of the steps involved before beginning any of the procedures in this manual.

NOTE—After repairing or replacing a component, run the unit for 20 minutes and check the oxygen concentration.

CAUTION—When servicing the *SolAiris* III, be absolutely certain that the correct tools are used and that the parts are free of oil and grease or any material not compatible with oxygen. Teflon® tape is recommended and must be applied to the male threads omitting the first thread to eliminate the possibility of tape particles entering the oxygen system. LOX-8™ sealant may be used in place of Teflon tape.

Teflon® is a registered trademark of DuPont. LOX-8 is a trademark of Fluoramics, Inc.

Component Testing, Repair, & Replacement

WARNING—Electric shock hazard. Do not remove cabinet. The cabinet may only be removed by a qualified DeVilbiss homecare provider.

WARNING—Disconnect the power cord from the wall outlet before attempting repairs on the unit. Extra care should be taken if it is necessary to operate the unit with the cabinet removed.

Leak Testing

Check for leaks using a certified leak detection solution such as Epi-Seal LEAK-SEEK. Apply leak test solution to all fittings and hose connections with the unit running. If an air leak is present, the solution will bubble. All leaks should be repaired before putting the concentrator back in service.

Cabinet Removal

To remove the front and back cabinets:

1. Ensure the unit is unplugged from the wall outlet.
2. Using a screwdriver, remove the six screws that hold the back cabinet to the internal structure and the bib (Figures 17 and 18).

NOTE—All six screws are the same size.

3. Remove the back cabinet by sliding it toward the rear until clear.
4. Remove the front cabinet by pushing the top shoulders toward the back of the unit, then outward away from behind the bib. Tilt the top of the front cabinet forward until it can be pulled out of the base of the unit.

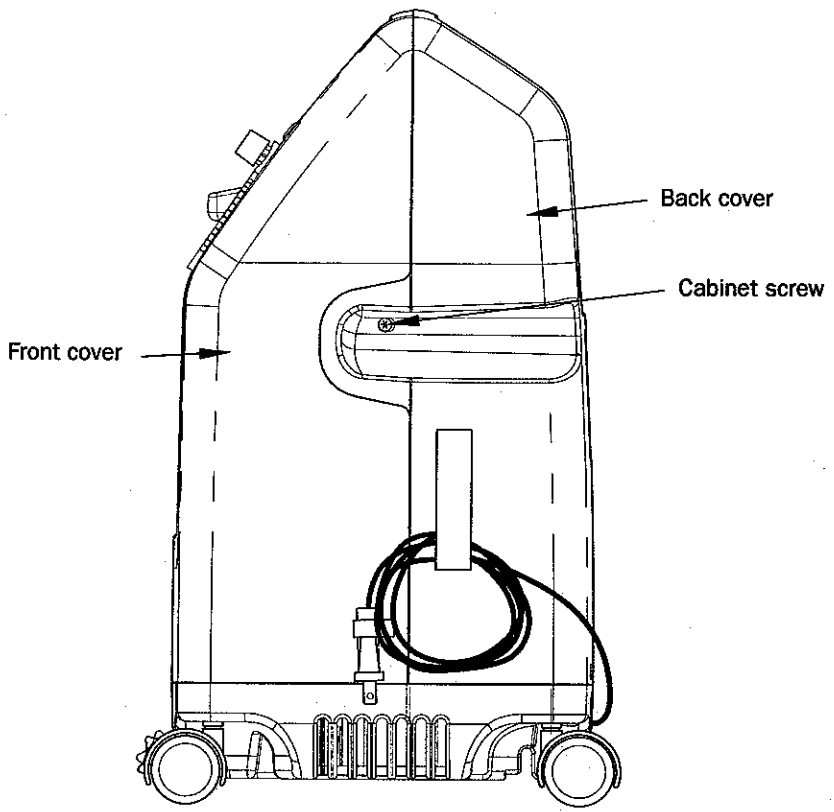


Figure 17

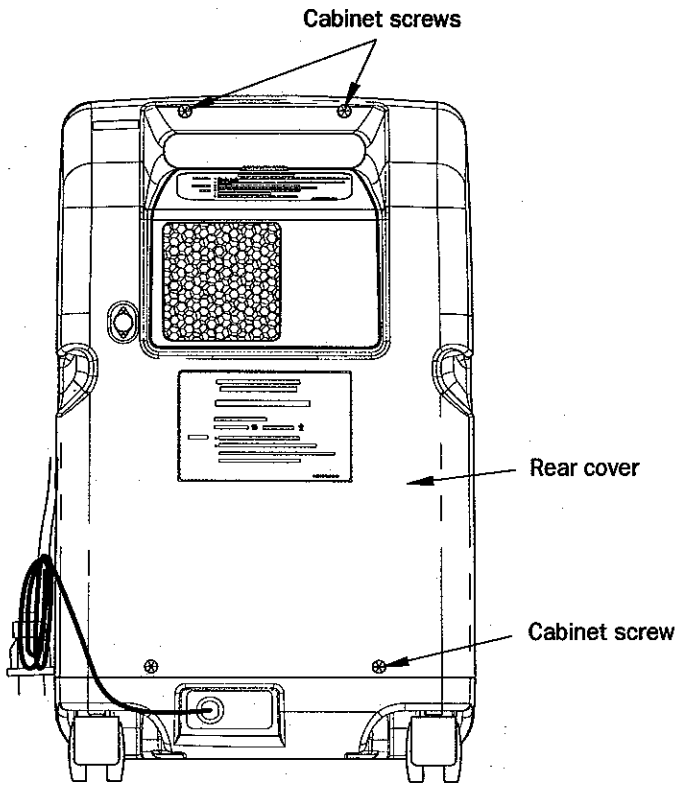


Figure 18

The majority of all the servicing and repairs can be done without removing the front bib. However, to gain access to the components behind the bib, it may be loosened or removed.

To loosen the bib:

1. Remove the two screws (located directly above the hour meter) that hold the bib to the unit's internal structure (Figure 19). This will allow access to the components behind the bib.

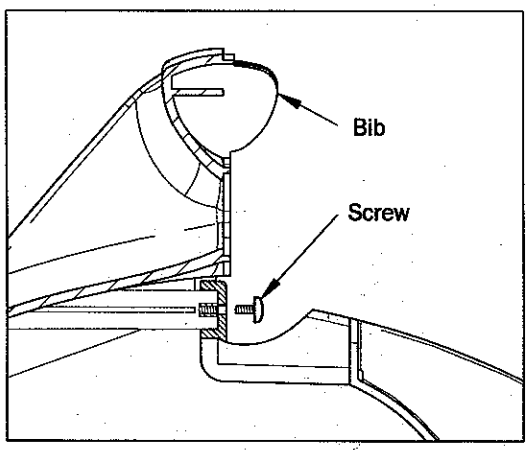
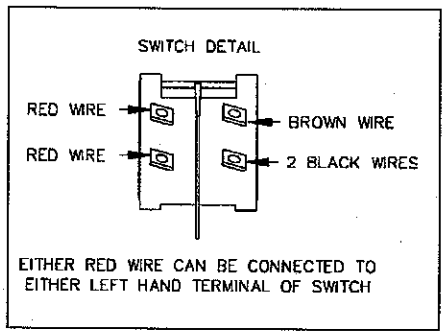


Figure 19

Component Testing, Repair, & Replacement

To remove the bib completely:

1. Disconnect the wires and mark these wires accordingly.
2. Unsnap bib from housing.


SWITCH DETAIL
RED WIRE
RED WIRE
BROWN WIRE
2 BLACK WIRES
EITHER RED WIRE CAN BE CONNECTED TO EITHER LEFT HAND TERMINAL OF SWITCH

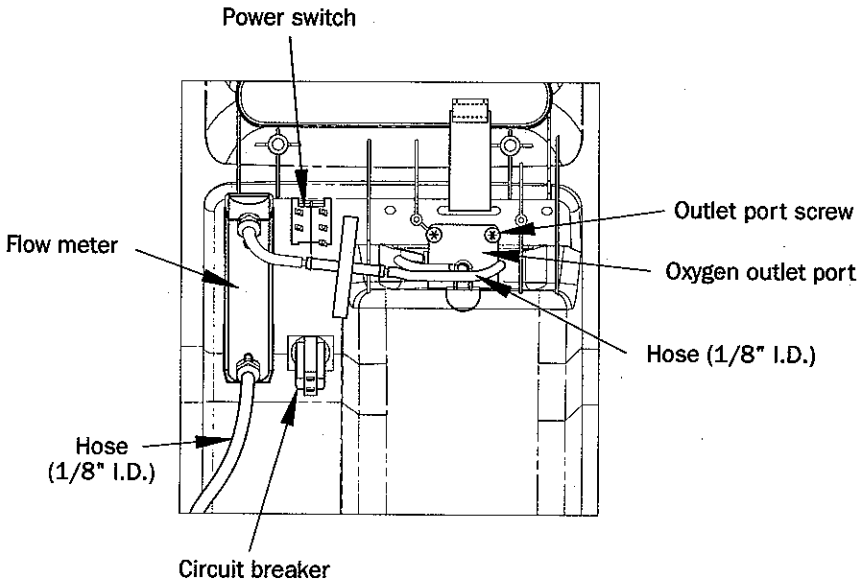


Figure 20

3. Remove the hose connected to the bottom of the flow meter (Figure 20).

To reassemble bib:

1. Reconnect the wires and hose.
2. Insert the bib tab into the compressor housing slot above the four-way valve.
3. Push until the bib snaps into place.
4. Secure bib with the two screws.

Power Cord

To replace the power cord:

1. Ensure the unit is unplugged from the wall outlet.
2. Remove the back cabinet (refer to page 34).
3. Disconnect the power cord connector (Figure 21).

NOTE—Loosening or removing compressor mounting plate may make it easier to service power cord.

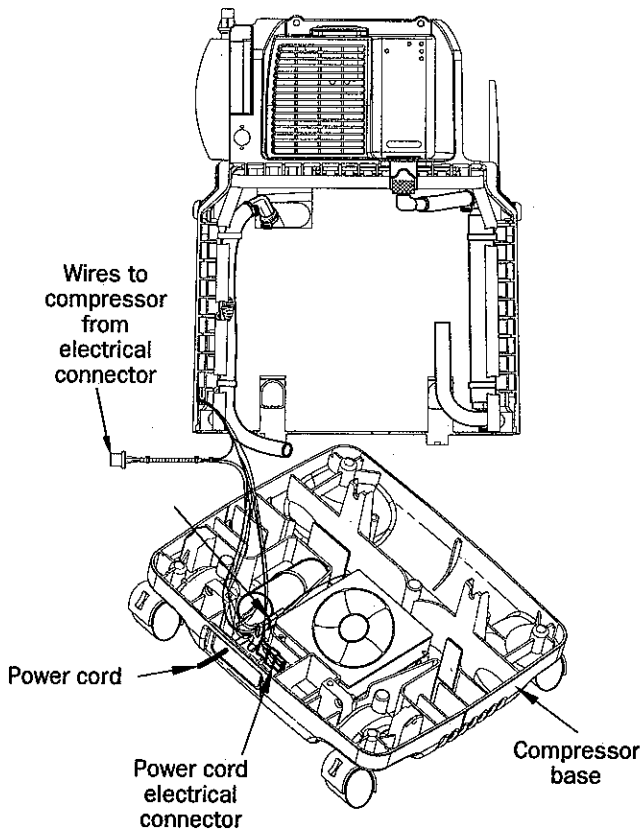


Figure 21

4. Note wire colors and socket locations before removing sockets from the connector housing.
5. Using a pair of duckbill pliers, squeeze the power cord strain relief and pull it out of the base of the unit.
6. Insert a new power cord through hole in the base of the unit and secure with strain relief.
7. Insert sockets into connector housing (Black wire position 1, white wire into position 3) and then reconnect the power cord connector.
8. Replace back cabinet and secure with the six screws.

Flow Meter

The *Sol*Airis III pressure-compensated flow meter has an accuracy level of ± 5% of full scale (exception: +0%/-5% at 3 LPM). The flow meter is designed for use at 8.5 PSI at flow rates up to 3 LPM.

To check for leaks in the flow meter tubing:

1. Check for leaks using a certified leak detection solution such as Epi-Seal LEAK-SEEK.
2. Apply leak test solution to all fittings and hose connections with the unit running.
3. If an air leak is present, the solution will bubble. All leaks should be repaired before putting the concentrator back in service.

WARNING—Electric Shock Hazard. Use caution when leak testing near electrical connections.

To replace flow meter (Figure 22):

1. Ensure the unit is unplugged from the wall outlet.
2. Remove the front and back cabinets and loosen the bib (refer to page 34).
3. Remove hose from each end of flow meter.
4. Using needle-nose pliers, remove the two spring clips that hold meter to the bib.
5. Push the flow meter through the bib.
6. Install the new flow meter in reverse order.

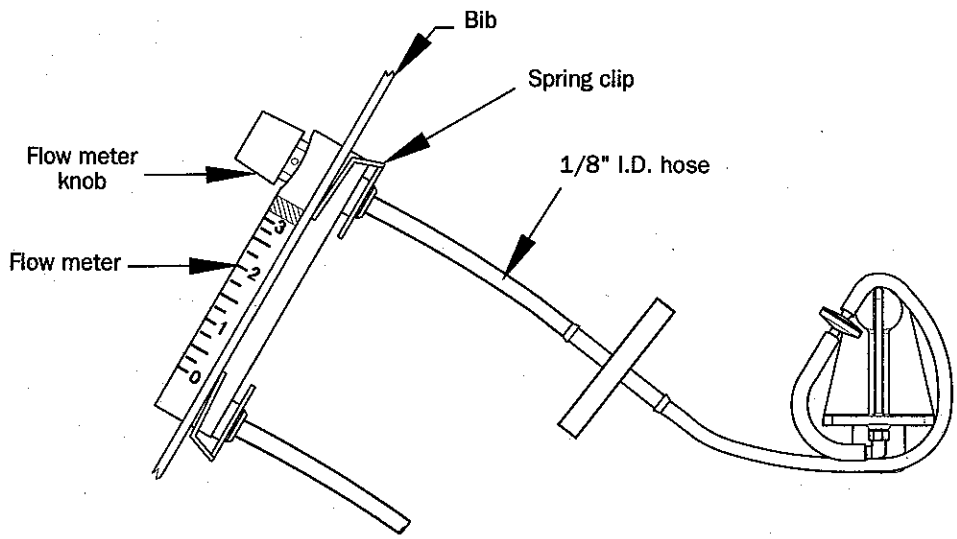


Figure 22

Component Testing, Repair, & Replacement

Power Switch

To replace the power switch:

1. Ensure the unit is unplugged from the wall outlet.
2. Remove the front and back cabinets and loosen the bib (refer to page 34).
3. Note the position of the wires and switch before removing the wires from switch terminals.
4. While squeezing the locking tabs on the sides of the switch, push the switch out of the front of the bib.
5. Install new switch in correct orientation making sure that it locks into position.
6. Reconnect wires on the switch terminals (Figure 20).

Hour Meter

To replace the hour meter:

1. Ensure the unit is unplugged from the wall outlet.
2. Remove the front and back cabinets and loosen the bib (refer to page 34).
3. Disconnect the hour meter connector from the PC board.
4. Remove the two screws securing the hour meter and remove the hour meter.
5. Install a new hour meter and secure with the two screws.
6. Connect the hour meter to the PC board.

Pressure Regulator

The pressure regulator stabilizes the flow of oxygen to the patient and establishes back pressure on the system. It is preset at 8.5 PSI and should not have to be adjusted in the field.

To test the pressure regulator:

1. Turn the unit "On."
2. Set the flow meter at 2 LPM.
3. Use a pressure-vacuum gauge (part #PVO2D-602) and a fitting suitable to fit on the oxygen outlet or on a short piece of tubing connected to the outlet.
4. If the pressure-vacuum gauge reads anything other than approximately 8.5 PSI with gauge outlet blocked, adjustment to the pressure regulator may be required. If so, call DeVilbiss Service Department at 800-338-1988.

NOTE—Ensure no leaks exist before adjusting pressure regulator.

A malfunction in the pressure regulator will cause either:

- a loss or fluctuation in the oxygen flow which will be seen on the flow meter or
- a decrease in oxygen concentration.

Component Testing, Repair, & Replacement

To replace pressure regulator:

1. Ensure the unit is unplugged from the wall outlet.
2. Remove the front and back cabinets (refer to page 34).
3. Remove hose clamp and hose from the pressure regulator (Figure 23).
4. Unscrew the regulator from accumulator tank.
5. Install a new regulator on accumulator tank and attach the hose and clamp.

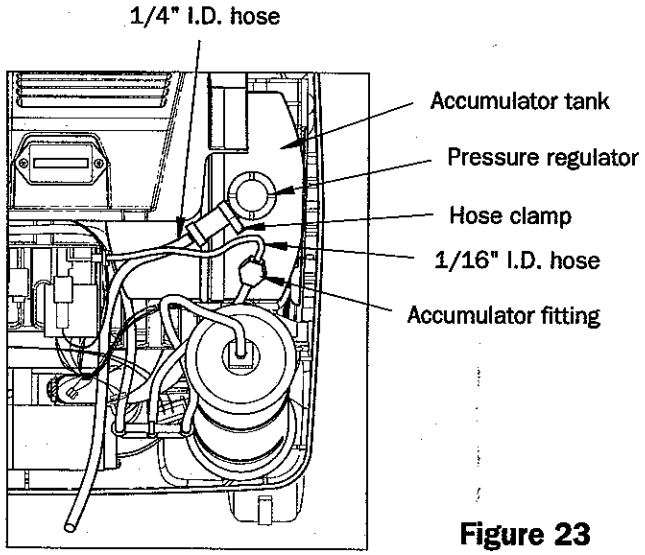


Figure 23

Sieve Bed Check Valves

Two check valves (Figure 24) allow oxygen to pass through the sieve beds to the accumulator tank when the bed pressure is greater than the tank pressure. These valves also prevent reverse flow of oxygen from the accumulator to the sieve beds.

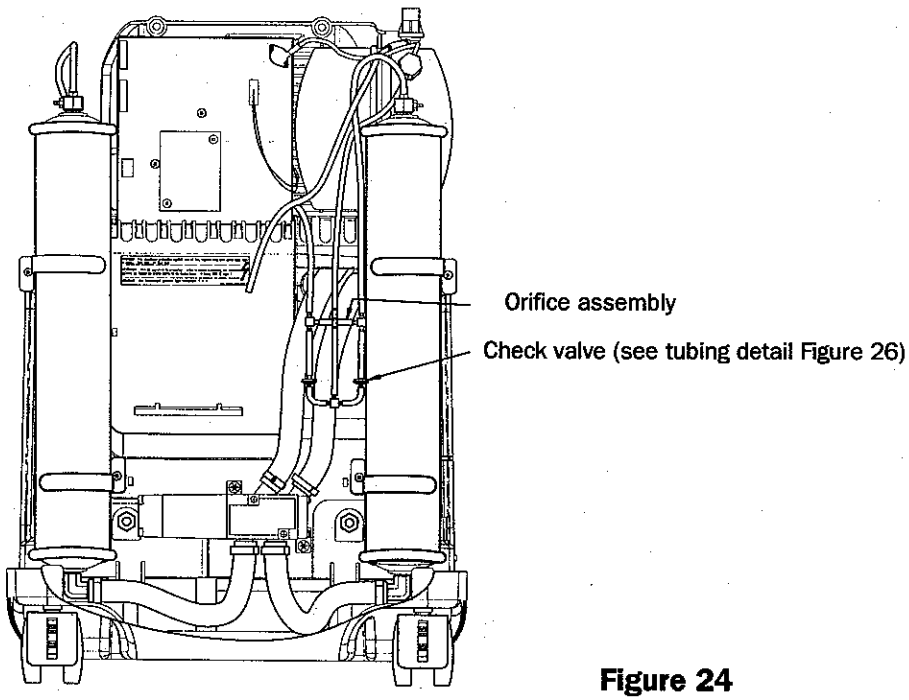


Figure 24

Component Testing, Repair, & Replacement

A defective check valve will result in a decrease in oxygen concentration and lower accumulator pressures.

To check accumulator pressures (Figure 25):

1. Ensure the unit is "Off."
2. Remove front and back cabinets (refer to page 34).
3. Use the pressure-vacuum gauge (part #PV02D-602) and pressure test assembly (part #444-502) included in the Service Kit.
4. Remove the 1/16" diameter hose from the accumulator tank and attach it to the barbed fitting on the pressure test assembly.
5. Attach the 1/16" diameter hose on the other end of the pressure test assembly to the accumulator tank fitting.
6. Install the gauge on the pressure test assembly.
7. Turn the unit "On" with the flow rate set to 3 LPM.

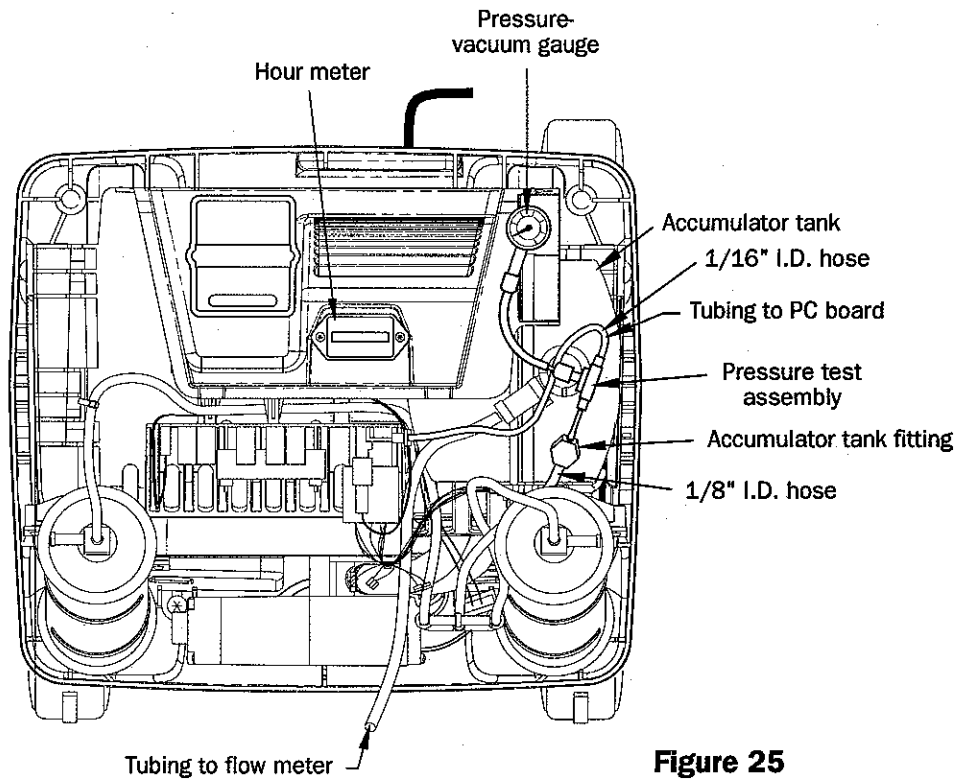


Figure 25

During each cycle, the pressure in the oxygen accumulator will rise to approximately 15 PSI and the four-way valve will shift to start a new 1/2 cycle. The pressure will then decrease to approximately 11 PSI at 3 LPM. This minimum pressure will vary according to flow rate. The higher the flow rate, the lower the pressure will drop in the accumulator tank. When the check valve opens allowing oxygen to flow into the accumulator, pressure will start to increase until maximum pressure is reached (15 PSI) again starting another new 1/2 cycle.

NOTE—A defective check valve may cause a rapid drop in accumulator pressure, pressures below approximately 11 PSI at 3 LPM, or a longer than normal cycle time.

Component Testing, Repair, & Replacement

To replace the check valves:

1. Ensure the unit is unplugged from the wall outlet.
2. Remove the front and back cabinets and loosen the bib (refer to page 34).
3. Cut cable tie that secures the check valves and tubing.
4. Remove the tubing from both ends of the check valve.
5. Insert a new check valve (part # PV02D-607) with flat side facing up toward orifice.

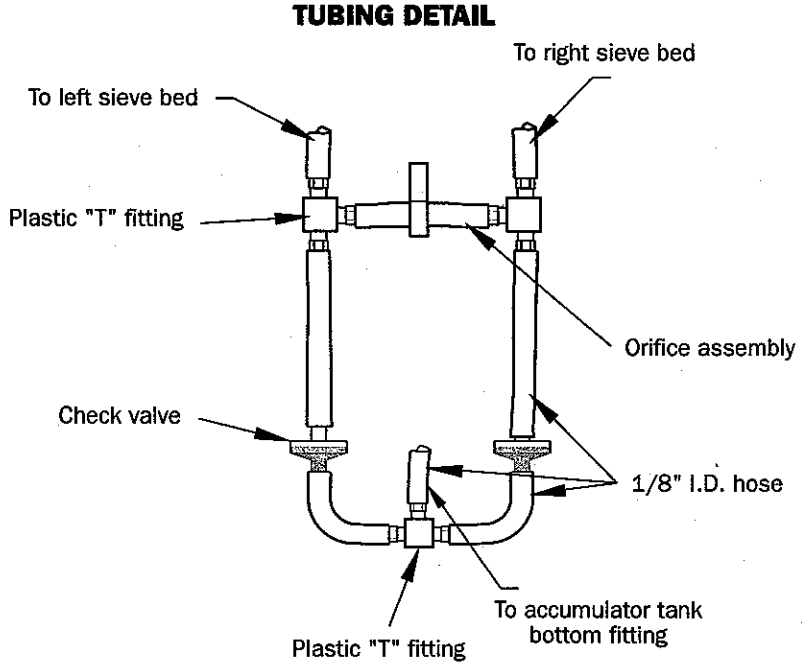


Figure 26

Final Check Valve

Another check valve is located between the final bacteria filter and the oxygen outlet fitting. This check valve allows only oxygen to flow out of the unit. When the unit is turned off and oxygen flow stops, the check valve closes to prevent water from being drawn into the unit.

A defective final check valve may allow water to be drawn in from the humidifier bottle when the unit is turned off. This may occlude the final bacteria filter and/or the flow meter causing a restriction of flow and making it difficult to adjust the flow rate.

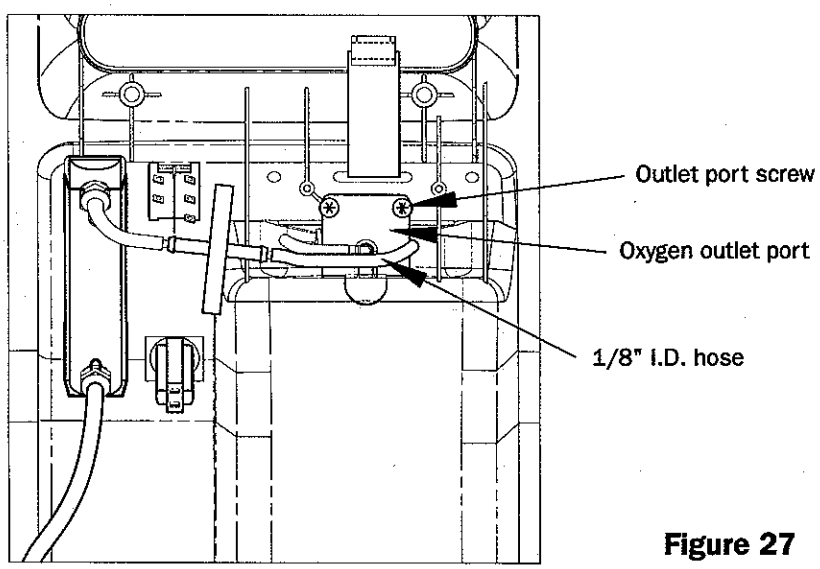


Figure 27

Component Testing, Repair, & Replacement

To replace the final check valve:

1. Ensure the unit is unplugged from the wall outlet.
2. Remove the front and back cabinets and loosen the bib (refer to page 34).
3. Remove the hose from the outlet side of the final bacteria filter.
4. Remove the two screws from the back of the oxygen outlet fitting assembly and remove the assembly.
5. Remove the hose from each end of final check valve (Figure 28).

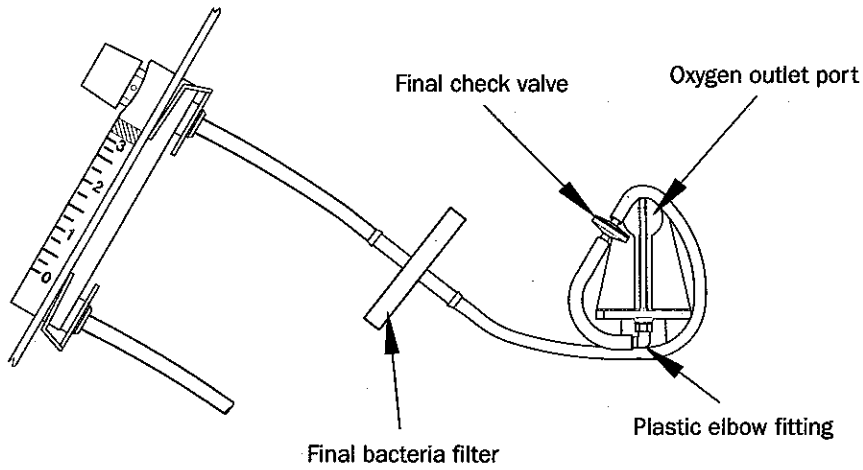


Figure 28

6. Attach the hoses to a new check valve (part #PV02D-607). Ensure that the flat side of the check valve is directed away from the oxygen outlet fitting.
7. Replace the outlet fitting assembly and connect the hose to the filter.

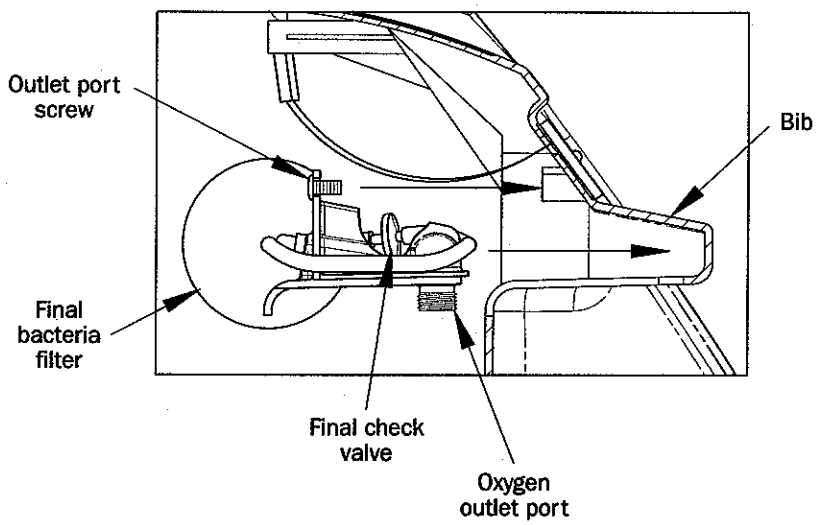


Figure 29

Component Testing, Repair, & Replacement

Molecular Sieve Beds

The two molecular sieve beds alternately remove the nitrogen from the air passing through them and provide the patient with a constant supply of oxygen.

Sieve bed pressures can be read by attaching pressure-vacuum gauges to the test points located at the top of each sieve bed (Figure 30).

Normal pressure-vacuum observed will be approximately 15 PSI/11 in. Hg. While one bed is pressurized, the other has a vacuum drawn.

The efficiency of the molecular sieve material will be impaired if it becomes contaminated by moisture. Contamination causes the molecular sieve material to lose its nitrogen adsorbing properties resulting in a decrease in oxygen concentration. Also, the pressure within the sieve bed will increase faster due to contamination which results in a shorter cycle time. Once the cycle time reaches the minimum preset cycle time, the patient alert system will sound due to a short cycle.

NOTE—The unit should run for a minimum of 20 minutes before turning "Off" to prevent problems associated with moisture contamination in the system.

The following tools are needed to test sieve beds:

- (2) Pressure-vacuum gauges (part #PVO2D-602)
- (2) Pressure test assemblies (part #444-502)

To test the sieve beds (Figure 30):

1. Remove the front and back cabinets (refer to page 34).
2. Remove the 1/16" plugged piece of tubing on the top of each sieve bed.
3. Attach the 1/16" I.D. hose from the test assembly to one of the access fittings on the top of the sieve beds. Attach one of the plugged pieces of tubing on the top of the bed to the 1/16" barbed fitting on the test assembly. Attach the second pressure test assembly to the other access fitting. Connect the pressure-vacuum gauges to the test assemblies. Turn the unit on and observe the cycling. Normal cycle times are approximately 8-11 seconds at a flow rate of 3 LPM, depending on altitude and the liter flow setting. (Refer to the Normal Operating Sequence, page 27).
4. After 20 minutes of operation, check the oxygen concentration levels. A combination of short cycle times and low oxygen concentration indicates contaminated sieve beds.

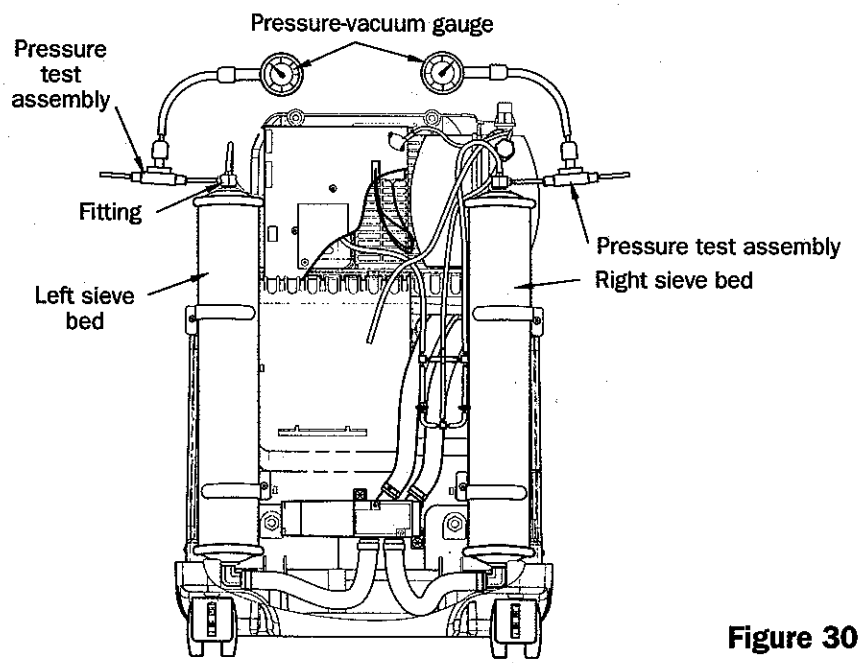


Figure 30

Component Testing, Repair, & Replacement

NOTE—If the short cycle (middle or middle and bottom diagnostic lights) alarm has been activated it must be determined whether the problem is with the sieve beds or a restriction of flow. A flow meter turned off or crimped tubing may cause such a restriction.

If the molecular sieve material is found to be no longer effective, first locate the source of the malfunction or cause (such as leaks) for contamination and take corrective action.

To replace the molecular sieve beds (after the problem has been corrected) (Figure 31):

a. Ensure the unit is unplugged from the wall outlet.

b. Loosen the screws for the sieve bed brackets that secure sieve beds to internal structure of the unit and swing the brackets to the side.

c. Remove the 1/8" I.D. hose from the top of each sieve bed.

d. Remove the hose clamps and reinforced tubing from the bottom of the sieve beds.

e. Install new sieve beds in reverse order. The bed serial number label should be at the top of the unit.

NOTE—Ensure that the sealing caps are removed from the new sieve beds just prior to connecting hoses.

5. Leak test all hose connections with a certified leak detection compound.

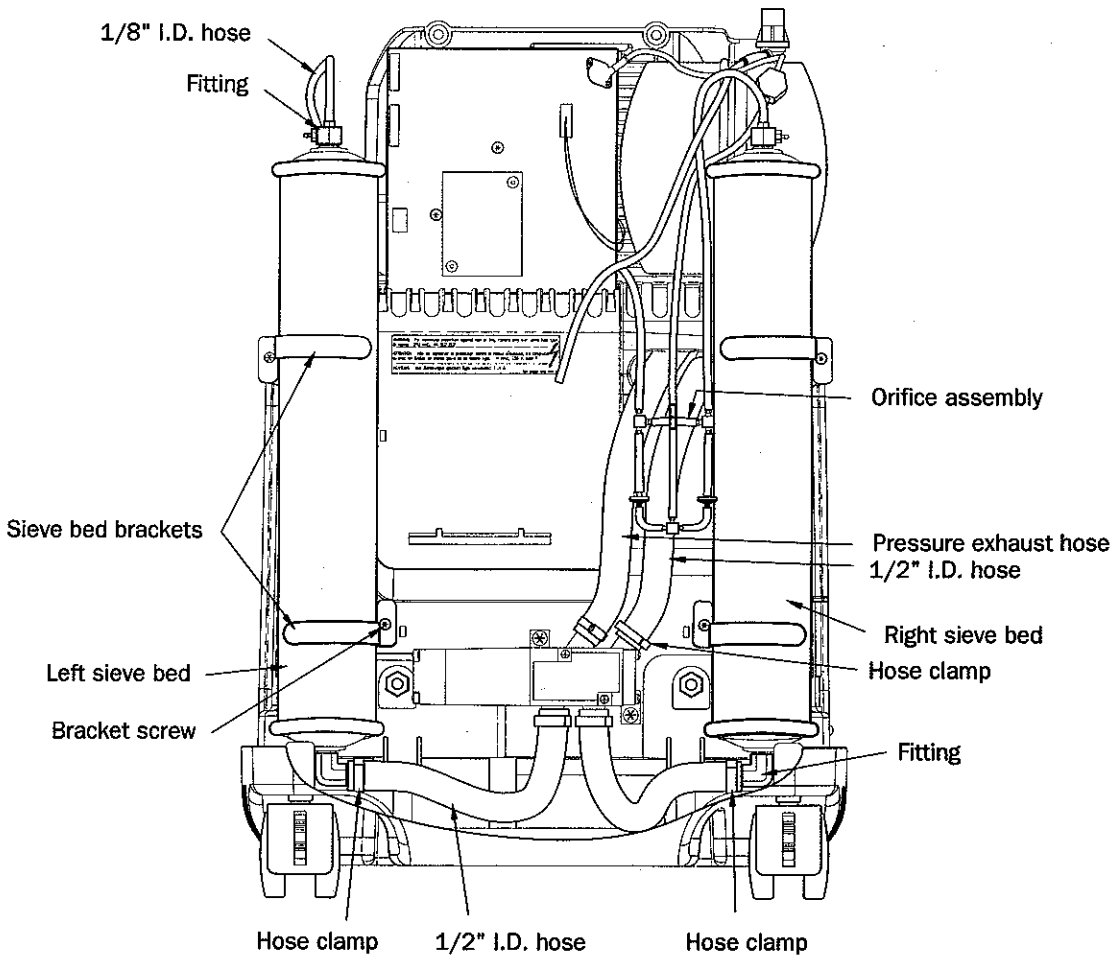


Figure 31

Component Testing, Repair, & Replacement

Compressor

The *SolAiris* III uses a double-head, oil-free compressor. One head is used to pressurize one sieve bed while the second head draws a vacuum on the other sieve bed. The compressor is secured to a metal plate with four rubber motor mounts.

A compressor that is worn or defective may:

- cause excessive noise and/or vibration or
- result in a long cycle or a reduced vacuum reading on each sieve bed or
- cause lower oxygen concentrations.

Long cycle times will activate the alarm system when the unit exceeds the maximum preset cycle and the red (long cycle time) diagnostic light on the PC board will illuminate (refer to page 26).

A worn or defective compressor can be caused by a defective internal component such as:

- compressor reed valve
- o-ring
- gasket
- Teflon ring

These components are included in the Compressor Service Kit (part #PV02D-671).

NOTE—A built-in thermal cutoff switch will shut the compressor off if it becomes overheated. This protects the compressor from damage caused by a heat build-up.

NOTE—A pressure relief (PR) valve is located on the pressure head to prevent high pressure build up in the system should a component malfunction occur.

To test compressor operating voltage:

115 VAC is required to operate the compressor. If the compressor does not start when the unit is turned on, the voltage input must be tested:

1. This voltage can be checked at the compressor connector using a volt meter or test light connected to the black and white wires. The volt meter is the best way to test. (Refer to test position, Figure 32.)

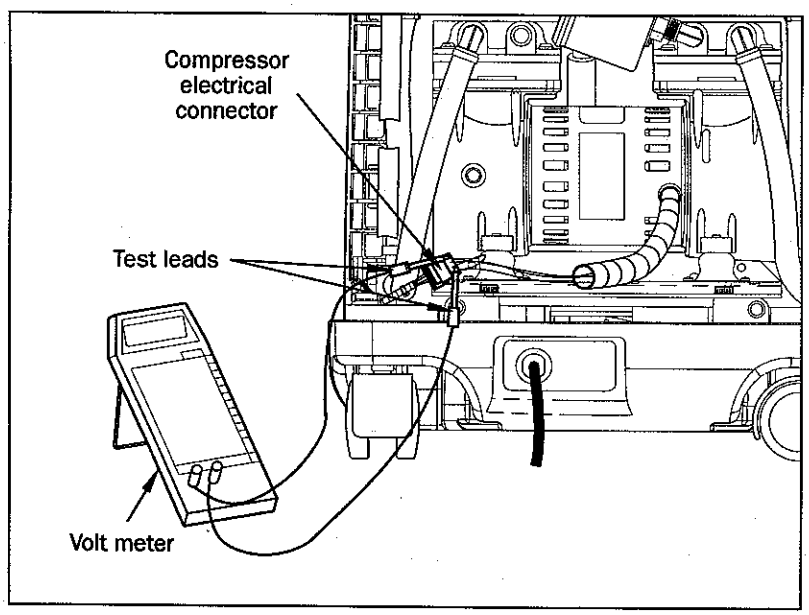


Figure 32

Component Testing, Repair, & Replacement

2. If no voltage is detected, disconnect power and check for loose or broken wires between the compressor connector and PC board.
3. If the wiring is good, replace the PC board.
4. If there is voltage at the compressor connector, then either the capacitor or the compressor itself is defective. (Refer to Simplified Troubleshooting on page 27.)

To test the compressor for proper output:

NOTE—If the compressor is not providing a high enough output, the cycle time will be long and the Patient Alert System might be activated.

1. Remove the front and back cabinets (refer to page 34).
2. Connect a set of pressure-vacuum gauges to the test points on the top of the sieve beds. A defective pressure head on the compressor will be indicated by slowly rising pressure in one bed. Pressure may only reach a certain level and then stop and eventually activate the long cycle alarm. If the vacuum head is defective, the amount of vacuum drawn will be reduced and may shorten the cycle time.

If these conditions are observed then:

- The unit filter(s) may be occluded - check the air intake filter, extended life filter, and the compressor filter for occlusions.
- There may a severe leak in system - check for air leaks using a leak detection solution.
- Compressor reed valves, Teflon ring or the compressor itself may be defective (refer to Figure 36).

If the filters are not occluded and no leaks are found, the compressor must then be removed and repaired or replaced.

To remove compressor:

1. Ensure the unit is unplugged from the wall outlet.
2. Disconnect the compressor wires by disconnecting the white electrical connector (Figure 32).
3. Remove hose clamp and tubing from the outlet fitting on the compressor filter (Figure 33).
4. Remove hose clamps and tubing from the pressure intake and vacuum intake fittings (Figure 33).

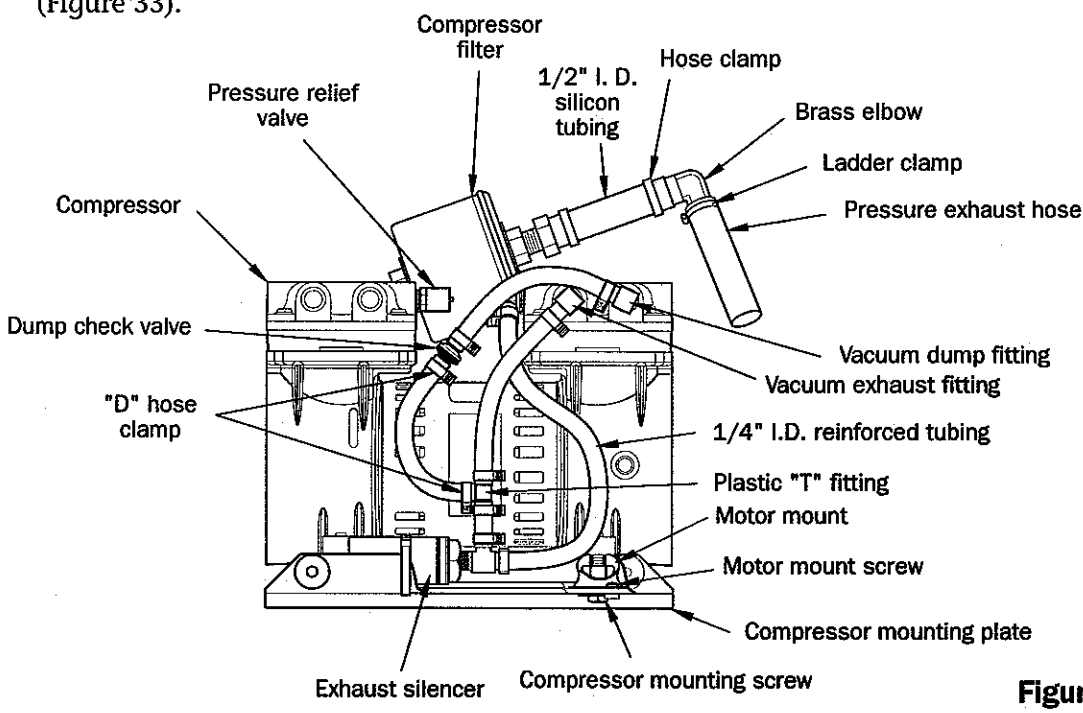


Figure 33

5. Remove the two screws from the back of the compressor mounting plate (Figure 34).

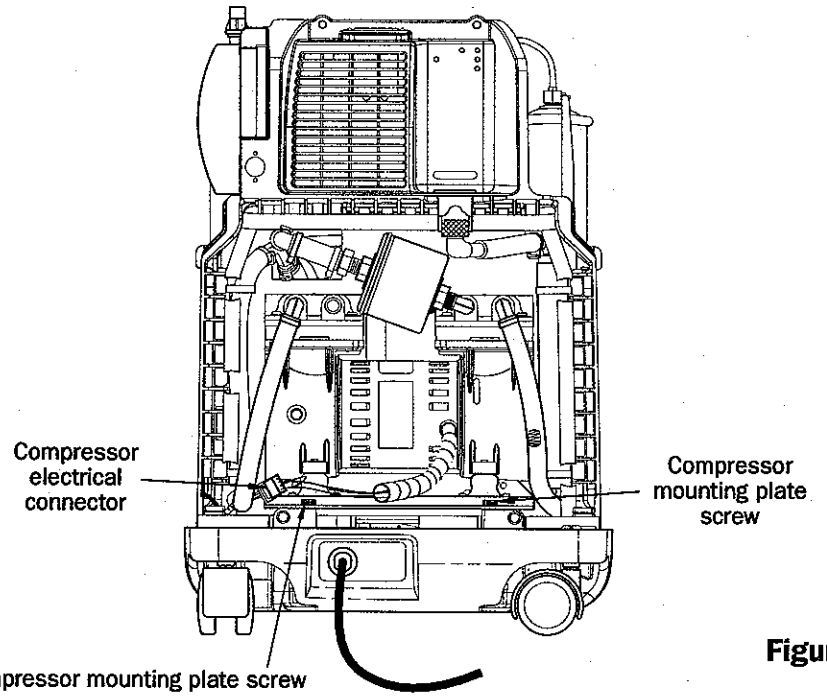


Figure 34

6. Remove the two hex nuts that secure the mounting plate to the front of the compressor housing (Figure 35). These nuts are located on each side of the four-way valve.

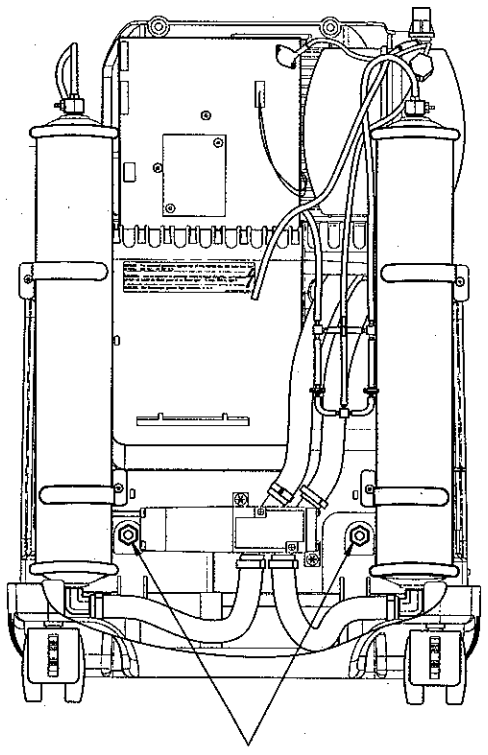


Figure 35

7. Lift compressor and mounting plate up and out of the compressor housing area.

CAUTION—If the unit has been running recently, the compressor may be hot.

Component Testing, Repair, & Replacement

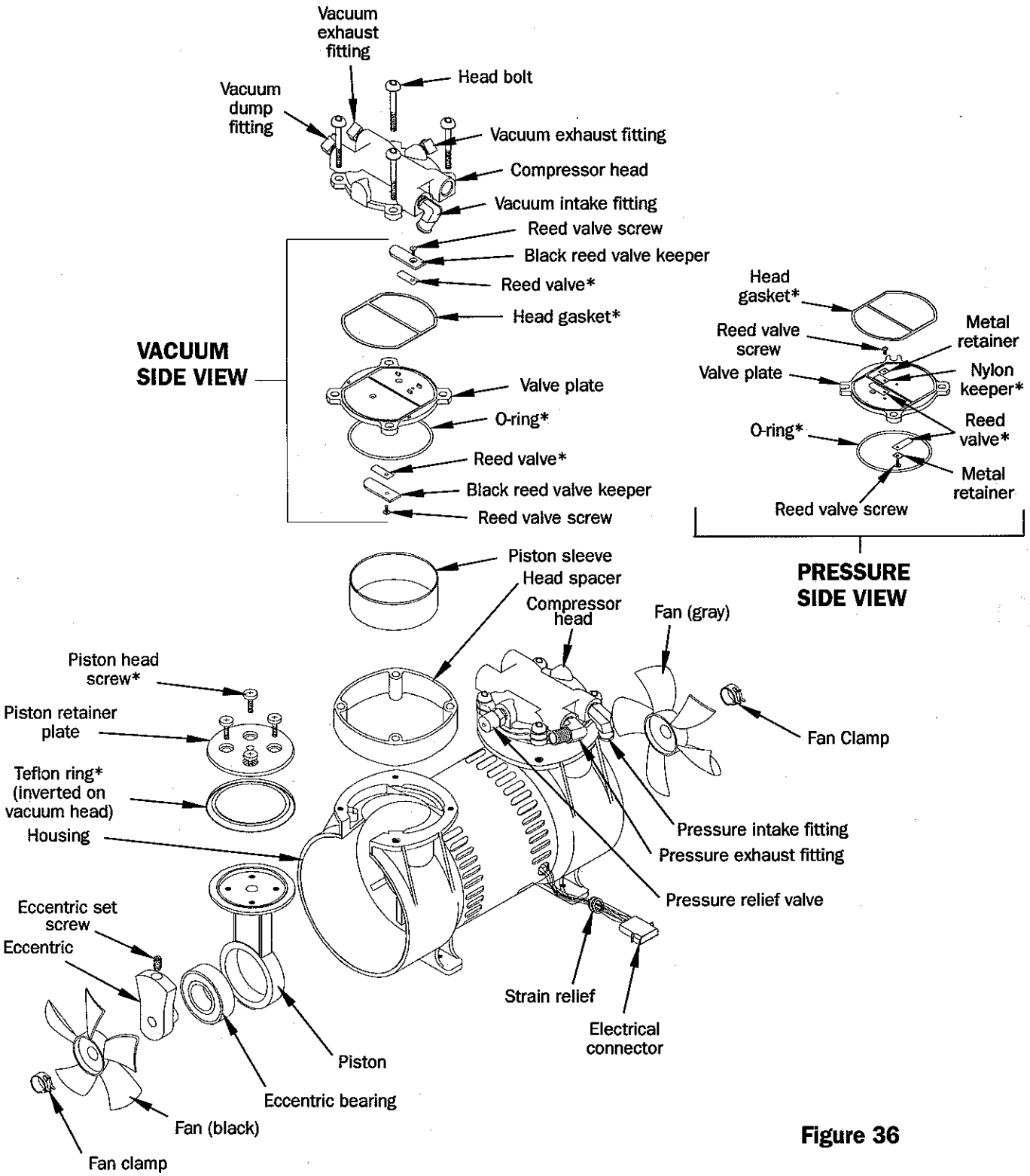


Figure 36

*Included in the compressor service kit (part # PV02D-671).

Component Testing, Repair, & Replacement

To inspect and/or replace internal components (Figure 36):

1. Remove the eight screws that hold the compressor heads in place. When removing the heads, be sure to keep each head and its components with the correct compressor side.
2. Check for proper placement of or damage to the gaskets on the bottom of the compressor heads. Replace if damaged.
3. Remove reed valve plates. A reed valve is located on each side of the valve plates.

NOTE—Scratches or a slight indentation on the top of the piston is normal. These are caused by the compressor reed valve.

4. The compressor reed valves should be flush with the valve plate. If the valve is broken, not flush with valve plate, or foreign matter is detected inside the head, clean or replace the compressor reed valve.

To replace the compressor reed valve (Figure 37):

a) Remove screw holding compressor reed valve in position on valve plate and discard reed valve.

NOTE—Pressure valve plate has nylon keepers and metal retainers, the vacuum side valve plate has black keepers.

b) Position the new reed so that it is centered and completely covers the hole in the valve plate.

c) Place the nylon keeper and metal retainer on the compressor reed valve. (Compressor reed valves on the bottom of the pressure valve plate have only the metal retainer and nylon keeper. The vacuum valve plate has black keeper only.) Secure these with the reed valve screw.

5. Check for proper placement of or damage to the rubber o-ring on the bottom of the valve plate. Replace if damaged.
6. Remove piston sleeves by pulling upward and inspect Teflon ring on pistons. Replace if badly worn or damaged.

To replace Teflon ring (Figure 37):

a) Remove screws from top of piston.

b) Remove the retainer plate.

c) Discard defective Teflon ring.

d) Place new Teflon ring into position.

e) The vacuum side Teflon ring should be inverted.

f) Replace retainer plate.

g) Secure with screws.

7. Reposition sleeve on piston.
8. Place valve plates on the compressor so that heads of compressor reed valve screws are aligned with the indentation in top of pistons.
9. Install the compressor heads so that the holes in the heads are aligned with the holes in the compressor housing.
10. Secure compressor heads with the screws.

Component Testing, Repair, & Replacement

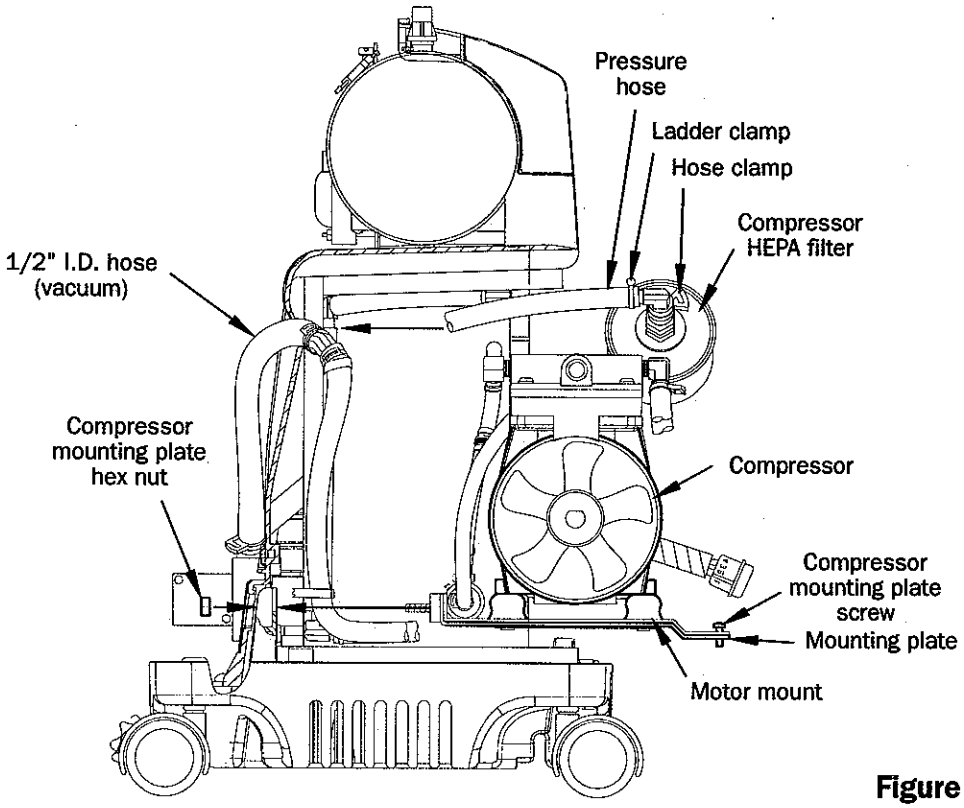


Figure 37

To replace compressor:

NOTE—For mounting plate and motor mount removal, refer to sections below.

1. Inspect motor mounts. Replace if damaged. Install motor mounts on compressor mounting plate. Secure the plate to the bottom of the new compressor using the four compressor mounting screws.
2. Position compressor on the base of the unit so that the studs on the mounting plate are aligned with notches on the front of the unit base.
3. Secure mounting plate with two screws on the back and install nuts on the front side of the plate.
4. Reconnect rubber hose and clamp to compressor filter.
5. Reconnect braided tubing and clamp to the pressure intake and vacuum intake fittings.
6. Reconnect the compressor connector.

To remove compressor from the mounting plate:

1. Turn compressor upside down so that it is resting on the heads.
2. Remove the four compressor mounting screws and mounting plate. One mounting screw is located in the middle of each motor mount.

NOTE—If compressor must be replaced, the compressor filter and hoses must be removed from the defective compressor head fittings. Depending on the hours of operation, a new compressor filter should be installed on the compressor if it is replaced or rebuilt. The exhaust muffler should be changed if the compressor is replaced or rebuilt.

To remove motor mounts:

1. Place compressor mounting plate on the work surface.
2. Remove the two screws that secure each motor mount to the plate.

Component Testing, Repair, & Replacement

Cooling Fan

The cooling fan provides a constant air flow to cool the compressor.

A defective cooling fan may cause the compressor's internal thermo-protective device to activate and shut the compressor off. Should this condition occur, the compressor will require several minutes for the thermo-protective device to reset.

If the cooling fan is defective, it must be replaced:

1. Ensure the unit is unplugged from the wall outlet.
2. Remove the front and back cabinets (refer to page 34).
3. Remove the compressor (refer to page 46).
4. Disconnect the cooling fan quick-connect terminal.
5. Note the position of the fan before removing the four retaining screws that secure the fan to the base of the unit.
6. Remove the defective fan and secure the replacement fan in position with the four retaining screws.

NOTE—When installing the fan, be sure the air flow directional arrow on the side of the fan is directed away from the compressor.

7. Reconnect the quick-connect terminal.
8. Replace the compressor.

Four-Way Valve

The electrically operated four-way valve alternately distributes pressure supplied by the compressor to the two molecular sieve beds.

Four fittings are connected to the four-way valve base (Figure 38). The fittings are:

- Top left fitting - to pressure exhaust of the compressor (black tubing).
- Top right fitting - to vacuum intake fitting on the head of the compressor.
- Bottom left fitting - to left molecular sieve bed.
- Bottom right fitting - to right molecular sieve bed.

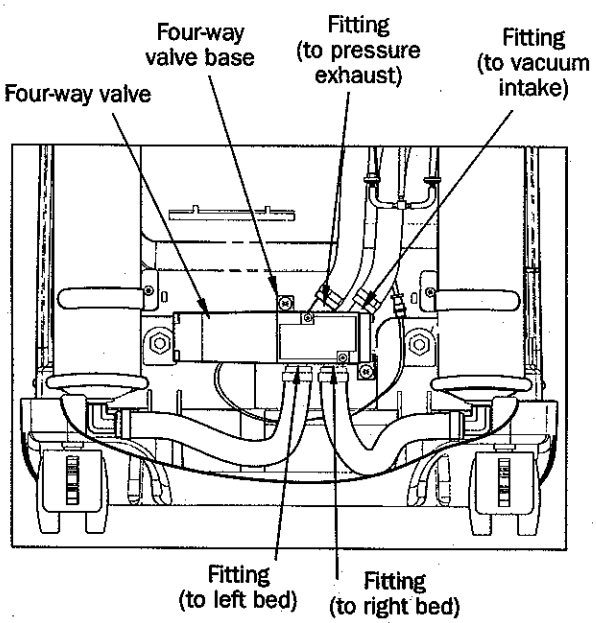


Figure 38

Component Testing, Repair, & Replacement

The four-way valve is a DC operated solenoid valve. The spool is moved to an activated position when the PC board sends a 12 VDC signal to the solenoid portion of the valve. The solenoid moves the spool electromagnetically and compresses a spring. In the activated position the four-way directs compressed air to the left bed and draws a vacuum on the right bed. Once the oxygen accumulator tank is filled through the left bed, the PC board stops sending a signal to the four-way and the spring returns the spool to its rest position. In its rest position, the four-way directs compressed air to the right bed and draws a vacuum on the left bed.

If the four-way does not shift the Patient Alert System should activate and the red diagnostic (high pressure) lights on the PC board will illuminate.

The cause of the four-way failure must be determined before corrective action can be taken. Some reasons for four-way failure are:

- A continuous or no 12 VDC signal to the solenoid coil.
- The solenoid coil may be defective.
- Foreign matter between the spool and sleeve preventing free movement.
- Defective or damaged spool, sleeve, or spring may exist.
- Sleeve o-rings may be worn or relaxed and not keeping the sleeve in position.

To test the four-way valve:

1. Remove the front and back cabinets (refer to page 34).
2. Connect the pressure-vacuum gauges to the test points located at the top of each sieve bed (Figure 39).
3. Turn the unit "On" and observe the green indicator light labeled "4-way" on the PC board (Figure 40).

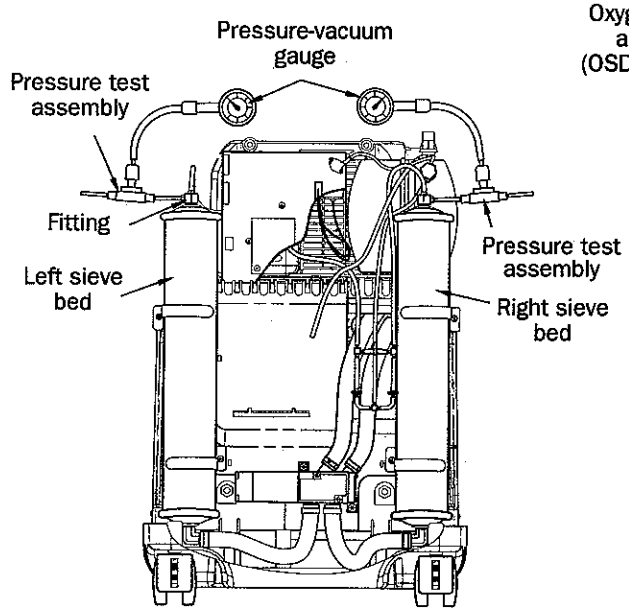


Figure 39

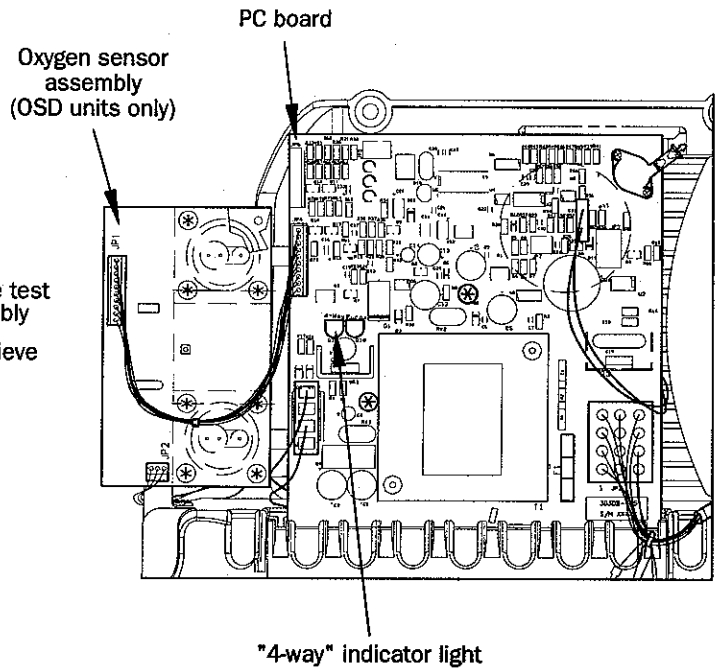


Figure 40

Component Testing, Repair, & Replacement

NOTE—When this light is illuminated the four-way should be activated and the left sieve bed should be pressurizing. If the right bed pressurizes instead, this is an indication that the four-way did not shift.

NOTE—If the left sieve bed pressurizes first, observe whether:

- **pressure is directed to the right sieve bed after the shift point pressure is reached or**
- **if the left bed continues to pressurize.**

(Refer to the Normal Operating Sequence, page 27.)

4. Place the test leads of a volt meter on the four-way wires in the electrical connector (refer to test position, Figure 41). Approximately 12 VDC should be measured while the green "4-way" indicator light on the PC board illuminates (voltage is supplied until accumulator tank pressure reaches 15 PSI). If no voltage is present at the terminals, check continuity of the brown and purple wires leading back to the PC board. If the wires are good, replace the PC board.

5. If 12 VDC is measured at the wires from the four-way in the electrical connector, then the four-way is defective electrically or some foreign matter is causing it to stick. The four-way valve must be removed so that it can be cleaned or replaced.

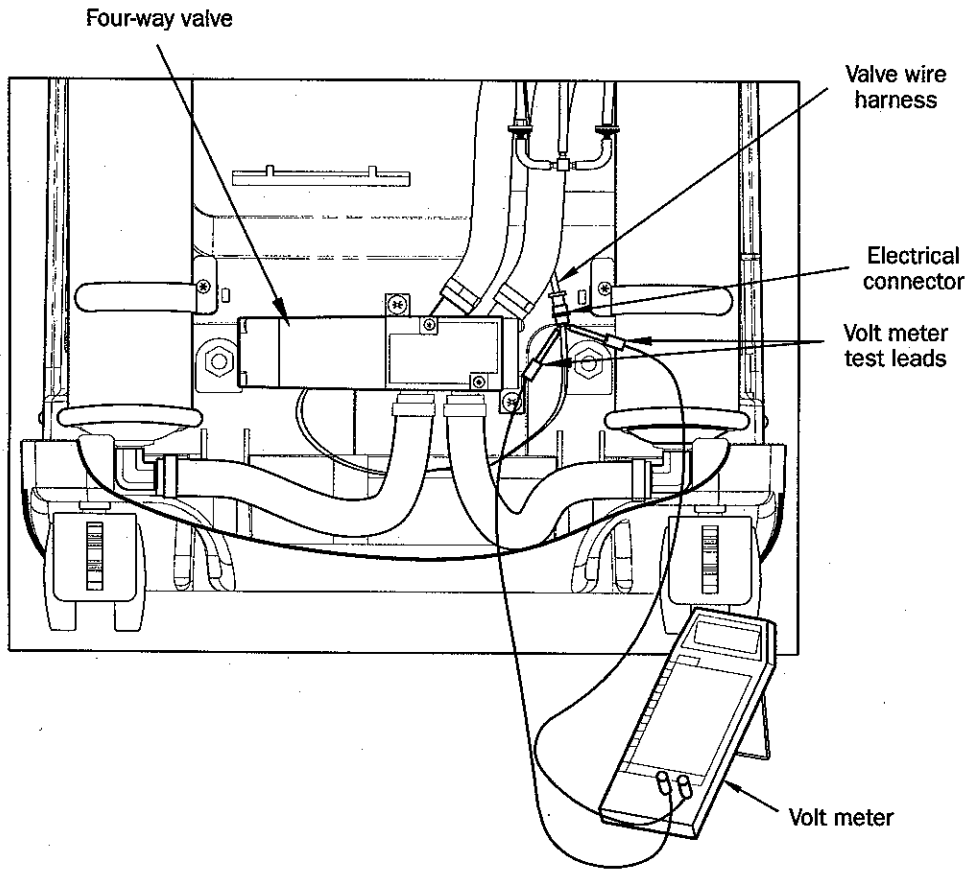


Figure 41

Component Testing, Repair, & Replacement

To remove four-way valve (Figure 42):

1. Ensure the unit is unplugged from the wall outlet.
2. Disconnect the electrical wires by pulling the two parts of the electrical connector apart.
3. Remove the two Allen head cap screws using a 9/64" Allen wrench.
4. Remove the top (solenoid/spool) part of the valve only along with the gasket (Figure 36).

NOTE—The valve base does not need to be removed. The base can remain on the unit whether the valve is being cleaned or replaced. During valve maintenance, it is recommended that the valve base ports be covered to prevent air, moisture, and dirt from entering the sieve beds.

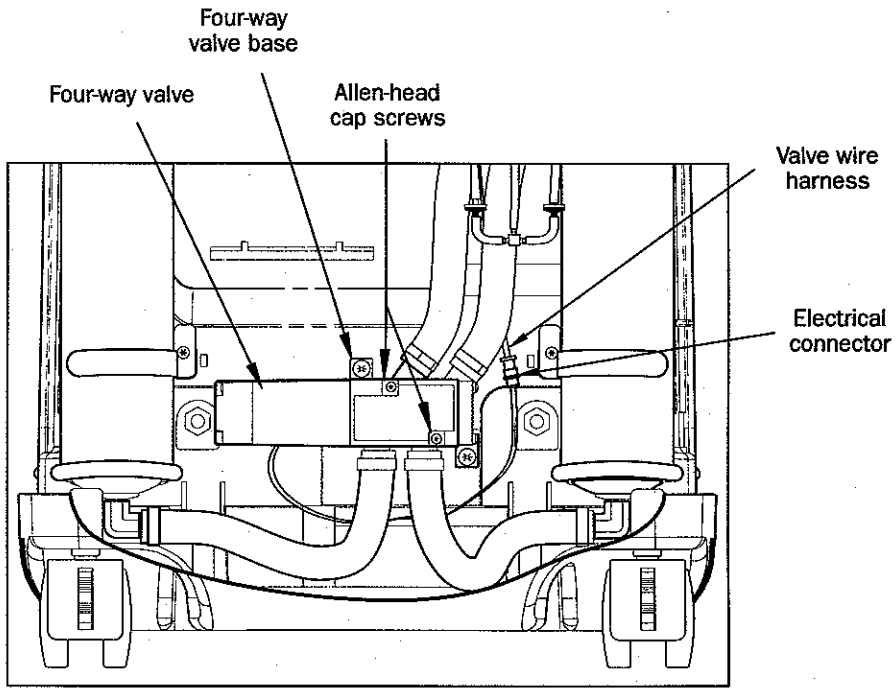


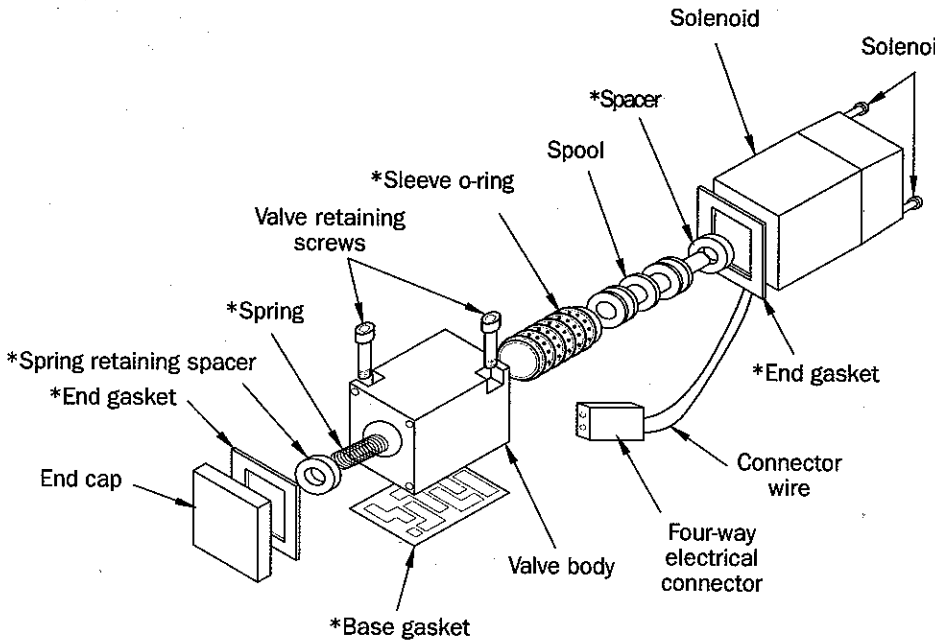
Figure 42

Component Testing, Repair, & Replacement

To clean the four-way valve (Figure 43):

1. Remove the two 9/64" Allen head screws from the front of the four-way valve.
2. Remove the valve body.
3. Remove the rubber gasket located between the valve body and valve base.
4. Remove the slotted screws from both ends of the valve.
5. Remove the end plates, plastic spacers, and spring. Note the position of these parts.
6. On the solenoid end of the valve, remove only the slotted screws. This will allow the solenoid portion of the valve to remain intact.
7. Carefully remove spool from valve body.

NOTE—Spool and sleeve are a matched set. Care should be taken not to mix different valve parts.



*** Included in the four-way valve rebuild kit (part # MC44I-707)**

Figure 43

8. Using a non-metallic rod or dowel with a diameter no greater than the sleeve, slowly push the sleeve out either end of the valve body.

NOTE—Pushing too fast will cause o-rings to roll and jam.

9. Inspect the o-rings on the sleeve. If they are badly worn or defective, they should be replaced using the Valve Rebuild Kit (part #MC44I-707).
10. The spool and sleeve can be cleaned using a spray-on evaporative electro-contact cleaner; e.g. ENVI•RO•TECH 1677™, or cleaned with a detergent powder; e.g. ALCONOX®. If using these cleaners, follow manufacturer's instructions carefully. DO NOT USE ANY TYPE OF CLEANSER THAT IS ABRASIVE OR LEAVES A RESIDUE.
11. Rinse the spool and sleeve thoroughly and dry with a soft, clean, lint-free cloth.
12. Ensure that the air passages (ports) in both the valve body and manifold are free of any foreign matter. A clean, lint-free cloth or a compressed air hose can be used to clean these.
13. Carefully push the sleeve into valve body, turning it slightly, so you do not cut or nick the o-rings.

ALCONOX® is a registered trademark of Alconox, Inc.
ENVI•RO•TECH 1677™ is a trademark of Tech Spray, Inc.

Component Testing, Repair, & Replacement

14. To ensure proper placement of sleeve, use a plastic spacer and push the sleeve and spacer in until the spacer is flush with mounting surface for the spring side of valve cap.
15. Reassemble remaining parts of valve in reverse order.

To replace the four-way valve (Figure 43):

1. Align the valve body and gasket on the valve base.
2. Tighten the two 9/64" Allen screws finger tight only.
3. Reconnect the electrical connector.

Printed Circuit Board

The printed circuit (PC) board is responsible for monitoring and controlling the *Sol*Air*is* III.

A pressure transducer on the PC board continuously senses the oxygen pressure in the accumulator tank. Once the pressure in the accumulator tank reaches approximately 15 PSI, the PC board sends a signal to the four-way valve and the spool moves inside the valve. Upon sensing 15 PSI again, it removes the signal and the valve moves to its rest position.

The PC board has preset alarms for minimum and maximum cycle times, low and high pressure points, and a power fail alarm. Should any of the alarm values be exceeded, the Patient Alert System will activate.

NOTE—If the concentrator has been unused for an extended period, the unit must run 20 minutes before the power fail alarm will activate. The alarm system incorporates a retry feature which virtually eliminates nuisance service calls.

To remove and replace the PC board (Figure 44):

1. Ensure the unit is unplugged from the wall outlet.
2. Remove the front and back cabinets and loosen the bib (refer to page 34).
3. Disconnect the electrical connectors of the wire harnesses from the PC board by depressing the latches and pulling them straight out.
4. Remove the 1/16" hose attached to the transducer.
5. Remove the two screws that secure the board to the unit and remove the PC board.
6. Install the new PC board and secure it using the two screws.
7. Reattach electrical connectors and the transducer hose.

Component Testing, Repair, & Replacement

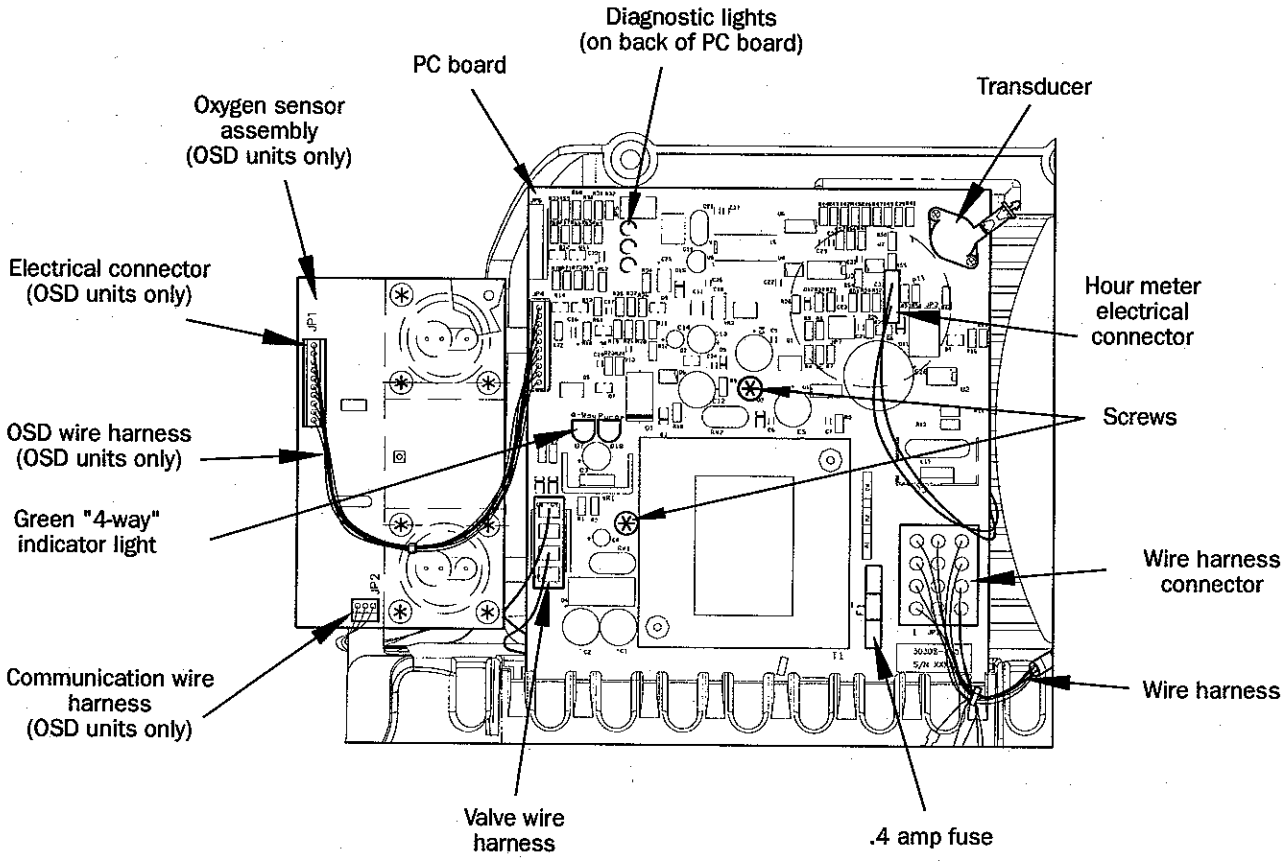


Figure 44

Capacitor

The capacitor enables the compressor to start and run by supplying voltage to the windings of the compressor motor. A defective capacitor will result in the compressor running slower or not starting.

> **WARNING—Electric Shock Hazard: When replacing the capacitor, do not touch the terminals or allow metal objects to come in contact with the terminals on the capacitor.**

If a defective capacitor is suspected, a new one must be installed.

To replace the capacitor:

1. Ensure the unit is unplugged from the wall outlet.
2. Remove the front and back cabinets (refer to page 34).
3. Remove compressor and lift foam to gain access to the compressor.
4. Cut the nylon cable tie holding the capacitor in place and remove the capacitor.
5. Disconnect the two wires from the terminals on the capacitor.
6. Reconnect the wires to the capacitor terminals.
7. Install the new capacitor and secure with a cable tie.
8. Replace compressor.
9. Replace cabinet and secure with the six screws.

Component Testing, Repair, & Replacement

OSD

The OSD is located beside the PC board.

To replace the OSD:

1. Ensure the unit is unplugged from the wall outlet.
2. Remove the front and back cabinets and loosen the bib (refer to page 34).
3. Disconnect the two terminal connectors for the OSD at the end of the wire harnesses by depressing the latches and pulling them straight out (Figure 44).

NOTE—To facilitate easier access to the OSD tubing, remove the two screws that hold the main PC board in place.

4. Remove the two screws from the bracket located on the side facing the inner structure (Figure 45). Snip the small cable tie that is holding the left bed tubing
5. Remove the two hose clamps and two 1/4" hoses attached to the OSD (Figure 45).
6. Replace the two 1/4" hoses and tighten the hose clamps to the new OSD. Replace cable tie on bed tubing.
7. Mount the OSD to the bracket using the two screws.
8. Reconnect the two terminal connectors.
9. Reinstall main PC board screws if they were removed.

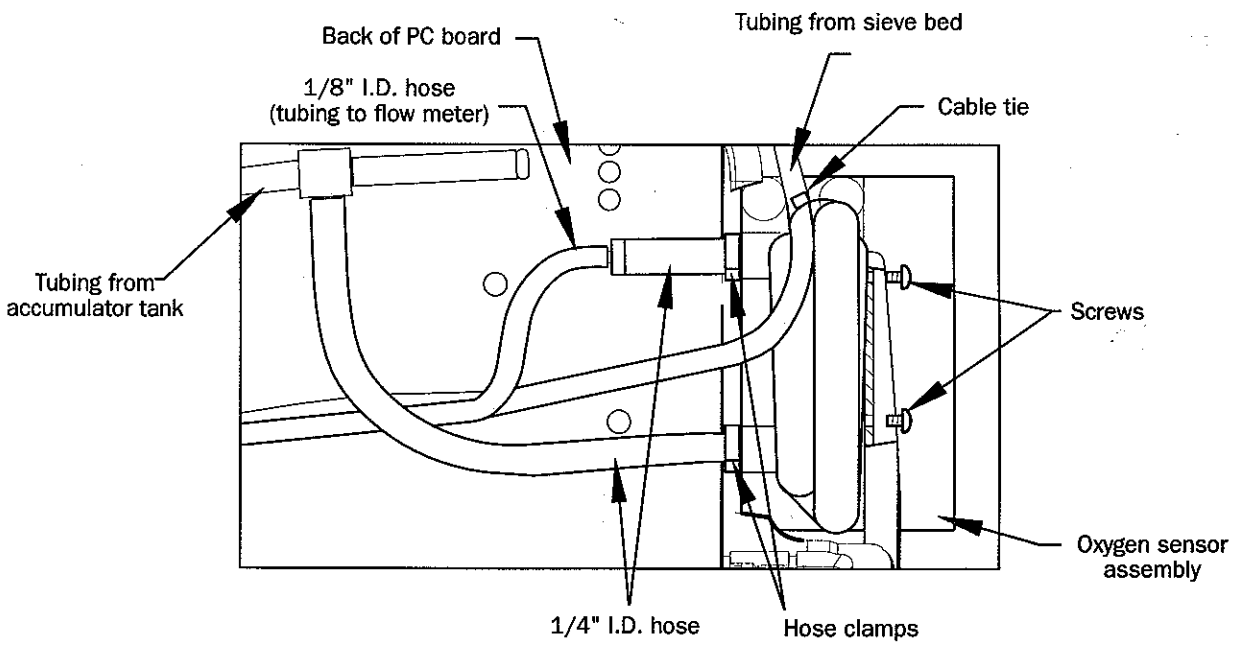


Figure 45

Ordering Information and Parts List

Ordering Information

When ordering components, instruction guides, or service manuals the following must be provided:

- Unit Model Number
- Unit Serial Number
- Part Number
- Quantity Required

*Sol*Airis Instruction Guide - part #A-303
*Sol*Airis III Service Manual - part #LT-1691

Orders may be placed by calling:

- SMS 800-333-4000
- Warranty and rebuilt parts U.S.A. 800-DeV-1988
- Canada 905-660-2459
- International Department 814-443-4881

PARTS RETURN AND ORDERING POLICY

ALL DEFECTIVE COMPONENTS THAT ARE STILL UNDER WARRANTY MUST BE RETURNED TO THE FACTORY IN SOMERSET, PA WITHIN 30 DAYS AFTER SHIPMENT OF THE NEW COMPONENTS. IF THE COMPONENTS ARE NOT RECEIVED WITHIN THIS PERIOD, AN INVOICE WILL BE ISSUED TO YOUR ACCOUNT.

REBUILT EXCHANGE PARTS PRICING IS AVAILABLE ONLY WITH THE RETURN OF DEFECTIVE PARTS WITHIN 30 DAYS. COMPONENTS WILL THEN BE BILLED AT THE REBUILT COST; THERE WILL BE A CHARGE FOR SHIPPING. IF THE DEFECTIVE COMPONENT IS NOT RECEIVED WITHIN 30 DAYS, THEN A NEW COMPONENT INVOICE WILL BE ISSUED TO YOUR ACCOUNT. COMPONENTS THAT ARE OUT OF WARRANTY AND NOT ON A REBUILT/EXCHANGE PROGRAM DO NOT HAVE TO BE RETURNED TO THE FACTORY.

Before returning parts or units to the factory, call the DeVilbiss Returns Department (1-800-DeV-1988 or 814-443-4881) to obtain a return authorization number. Include in the package a note indicating the return authorization number along with your company name, address, phone number, and account number. The return authorization number should also be written on the outside of the package.

To expedite your order for warranty or non-warranty parts, the following information should be given to the representative:

- Model number
- Serial number
- Hour meter reading for each concentrator
- Account number
- Company name and address

Ordering Information and Parts List

Description	Part Number
Access Fitting & Plugged Tubing	MC44D-706
Accumulator Tank	303DZ-616
Accumulator Tank Fitting	444-582
Air Filter	303DZ-605
Bib (303DS)	303DS-603
Bib (303DZ)	303DZ-603
Cabinet (Front)	303DZ-601
Cabinet (Back)	303DZ-602
Cabinet Screws	303DZ-628
Capacitor	303DZ-624
Carton w/2 Foam Pads	303DZ-621
Caster (locking)	PV5LD-604
Caster (non-locking)	PV5LD-603
Check valve (Dump)	444-527
Check Valve (Final/Sieve Bed)	PVO2D-607
Circuit Breaker	303DZ-620
Compressor	303DZ-614
Compressor Base w/Casters	303DZ-625
Compressor HEPA Filter	303DZ-608
Compressor Motor Mount	303DZ-609
Compressor Motor Mount Screw	303DZ-631
Compressor Mounting Plate	303DZ-610
Compressor Mounting Plate Hex Nut	303DZ-630
Compressor Mounting Plate Screw	303DZ-628
Compressor Mounting Screw	303DZ-629
Compressor Service Kit	PVO2D-671
Cooling Fan	303DZ-618
Exhaust Silencer	303DZ-612
Extended Life Intake Bacteria Filter	MC44D-605
Filter Door Assembly	303DZ-604
Final Bacteria Filter	PV5LD-651
Final Check Valve	PV02D-607
Flow Meter	303DZ-617
Flow Meter Knob	PVO2D-618
Four-Way Base	303DZ-627
Four-Way Valve	303DZ-613
Four-Way Valve Rebuild Kit	MC44I-707
Four-Way Valve Wire Harness	303DZ-626
Fuse (.4 Amp)	PVO2D-610
Handle	303DZ-647

Ordering Information and Parts List

Description	Part Number
Hose (1/16" I.D.)	444-526
Hose (1/4" I.D.)	444-525
Hose (1/8" I.D.)	444-554
Hose (1/2" I.D.)	444-549
Hose Clamp (BB)	444-524
Hose Clamp (G)	444-538
Hose Clamp (D)	400-0003-005
Hour Meter	PV5LD-617
Humidifier (Bubble)	HUM16
Intake Silencer Assembly	303DZ-611
Ladder Clamp	444-566
Light Panel (303DS)	303DS-615
Light Panel (303DZ)	303DZ-615
Line Cord	PV5LD-618
Line Cord Strap	MC29D-657
OSD Communication Wire Harness	MC44DSM-685
OSD Oxygen Sensor Assembly	303DS-621
OSD Wire Harness	303DS-601
Oxygen Outlet Connector (Christmas Tree Fitting)	CN100
Oxygen Outlet Connector (Metal Christmas Tree Fitting)	CN200
Oxygen Outlet Port	303DZ-606
Oxygen Tubing	OST50
PC Board (303DS)	303DS-622
PC Board (303DZ)	303DZ-622
Plastic Error Indicator Tool	303DZ-635
Plastic T Fitting	303DZ-632
Power Switch	505DZ-508
Pressure Hose	444-565
Pressure Regulator	MC29D-612
Pressure Test Assembly	444-502
Pressure-Vacuum Gauge	PVO2D-602
Pressure Relief Valve	PVO2C-612
Rear Wheel Conversion Kit	303DZ-636
Sieve Bed	303DZ-619
Sieve Bed Bracket	303DZ-607
Sieve Bed Check Valve	PV02D-607
Silicon Tubing (1/2" I.D.)	303DZ-634
Spacer and Spring Retaining Spacer	MC44I-631
Strain Relief	PV5LD-602
Wire Harness	303DZ-623

Notes